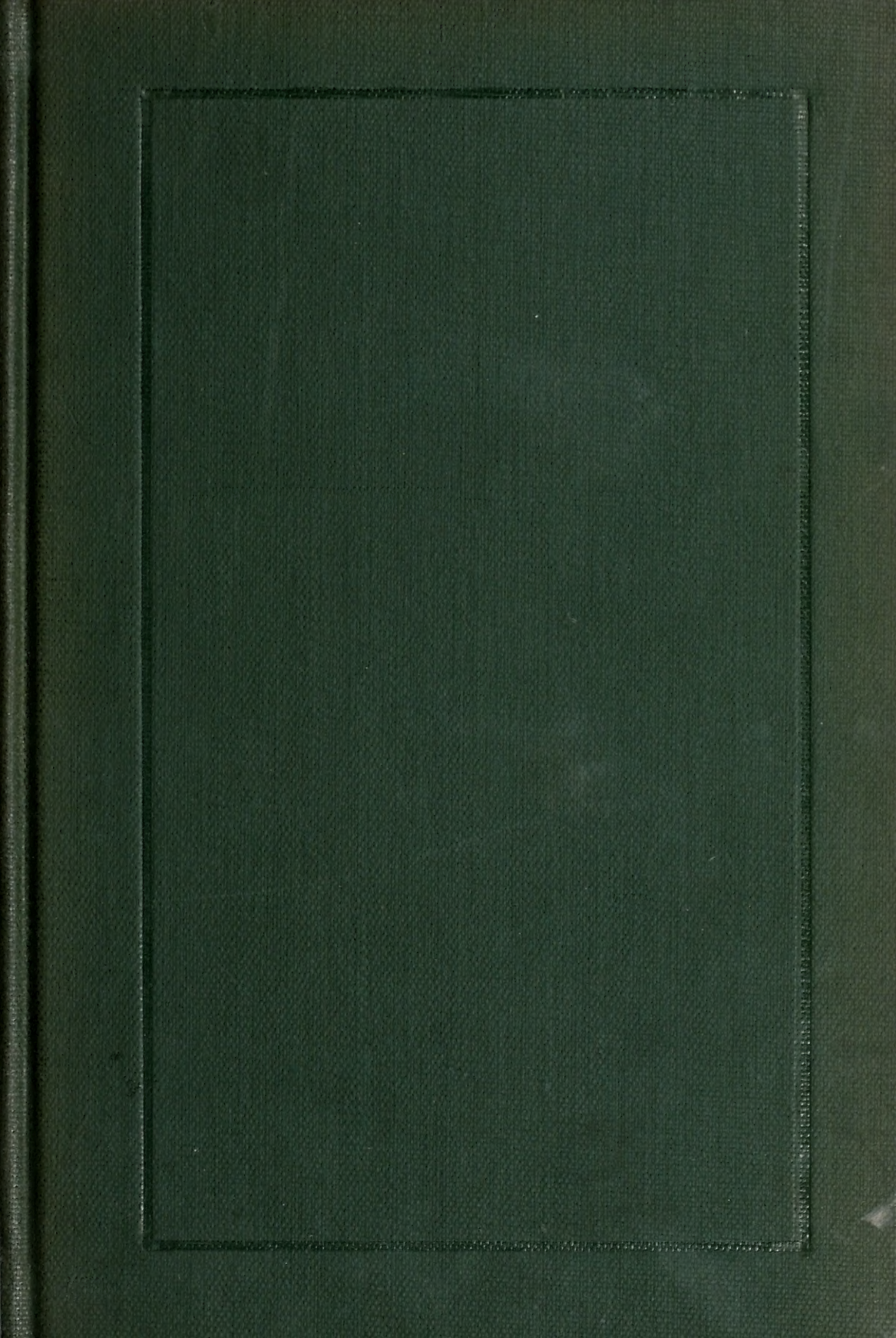






SIAMANG

P.
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TWENTY-FIRST ANNUAL REPORT
OF THE
NEW YORK
ZOOLOGICAL SOCIETY

CHARTERED IN 1895

OBJECTS OF THE SOCIETY
A PUBLIC ZOOLOGICAL PARK
THE PRESERVATION OF OUR NATIVE ANIMALS
THE PROMOTION OF ZOOLOGY

1916



NEW YORK
OFFICE OF THE SOCIETY, 111 BROADWAY
JANUARY, 1917

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 RICHARD, EDWIN A.,
 RICHARD, MISS ELVINE,
 RICHARDS, E. O.,
 RICHARDS, EBEN,
 RICHARDSON, MRS. C. TIFFANY,
 RIGGS, GEO. C.,
 RIPLEY, JULIEN A.,
 RIPPE, MRS. E. J.,
 RIVES, GEORGE L.,
 ROBBINS, CHANDLER,
 ROBBINS, MRS. HELEN C.,
 ROBERTS, G. THEODORE,
 ROBERTS, MISS GRACE VAN BRAAM,
 ROBERTS, MISS M. M.,
 ROBERTS, OWEN F.,
 ROBERTSON, ALBERT,
 ROBERTSON, R. H.,
 ROBINSON, MRS. DOUGLAS,
 ROBINSON, EDWARD,
 *ROBINSON, ELI K.,
 ROBINSON, G. H.,
 ROBINSON, MISS PAULINE,
 ROBISON, WILLIAM,
 ROCHE, MRS. BURKE,
 ROCKWOOD, WILLIAM H.,
 RODEWALD, F. L.,
 ROE, CHARLES F.,
 ROE, FRANK O.,
 ROE, IRVING L.,
 ROENIG, WALTER,
 ROGERS, E. L.,
 ROGERS, MRS. FRANCIS,
 ROGERS, HUBERT E.,
 ROGERS, JAMES H.,
 ROGERS, MRS. WILLIAM BEVERLEY,
 ROKENBAUGH, HENRY S.,
 ROLLE, AUGUSTUS J.,
 ROMBOUGH, JOHN B.,
 ROOF, CLARENCE M.,
 ROOSEVELT, MRS. JAMES,
 ROOSEVELT, MRS. HILBORNE L.,
 ROOSEVELT, W. EMLIN,
 ROOT, ELIHU,
 ROSE, MRS. A. SUMNER,
 ROTH, FREDERICK G. R.,
 ROTH, J. E.,
 ROTHILAU, REV. ANTHONY J.,
 ROTHWELL, JAMES E.,
 ROWLAND, THOMAS,
 RUHE, LOUIS,
 RUHL, LOUIS,
 RUNYON, CARMAN R.,
 RUNYON, E. W.,
 RUPERTI, JUSTUS,
 *RUPPERT, JACOB,
 RUPPERT, MRS. JACOB,
 RUSSELL, ARCHIBALD D.,
 RUSSELL, MRS. HORACE,
 RUSSELL, DR. JOHN F.,
 RYAN, J. D.,
 RYAN, JOHN BARRY,
 RYLE, ARTHUR,
 RYLE, GRAHAM,
 SACHS, ARTHUR,
 SACKETT, MISS GERTRUDE T.,
 SAGE, JOHN H.,
 SAMPSON, ALDEN,
 SAMPSON, CHARLES E.,
 SANDS, MISS ANNE A.,
 SANDS, BENJAMIN AYMAR,
 SANDS, MRS. BENJAMIN AYMAR,
 SANGER, MRS. RALPH,
 SARGENT, GEORGE LLOYD,
 SATTERLEE, MRS. H. L.,
 SATTERWHITE, PRESTON P.,
 SAUNDERS, ALFRED W.,
 SAUNDERS, MRS. VIRGINIA,
 SAUTER, FREDERICK,
 SAUTER, JR., FRED,
 SCHAEFER, ANDREAS F.,
 SCHAEFER, EDWARD C.,
 SCHAEFER, HENRY,
 SCHAAF, HERMANN,
 SCHALL, JR., J. W.,
 SCHANCK, GEORGE E.,
 SCHARMANN, A. C.,
 SCHAU, C. F.,
 SCHAUFFLER, DR. A. F.,
 SCHAUFFLER, MRS. A. F.,
 SCHEFER, ANTON H.,
 *SCHEFER, CARL,
 SCHENCK, HENRY DEB.,
 SCHIEFFELIN, MRS. H. M.,
 SCHIEFFELIN, WILLIAM JAY,
 SCHIRMER, MRS. MARTHA B.,
 SCHIRMER, RUDOLPH E.,
 SCHMELZEL, JAMES H.,
 SCHMELZEL, MISS JANE E.,
 SCHMIDT, ADOLPH T.,
 SCHMIDT, WILLIAM H.,
 SCHNABEL, R. A.,
 SCHOLLE, A. H.,
 SCHRAG, CHARLES A.,
 SCHRAG, LOUIS,

SCHREITER, HENRY,
 *SCHREYVOGEL, CHARLES,
 SCHUMANN, JR., JOHN J.,
 SCHUYLER, MISS LOUISA LEE,
 SCHWARZ, HENRY F.,
 SCHWARZLER, ALBERT J.,
 SCOFIELD, MISS MARION,
 SCOTT, DONALD,
 SCOTT, HON. FRANCIS M.,
 SCOTT, MRS. FRANK H.,
 SCOTT, THOMAS BLYTHE,
 SCOTT, WILLIAM,
 SCOVILLE, HERBERT,
 SCOVILLE, MRS. JOHN H.,
 SCOVILLE, ROBERT,
 SCRIBNER, ARTHUR H.,
 SCRIBNER, MRS. CHARLES,
 SCRYMSEY, JAMES A.,
 SEAMAN, DR. LOUIS L.,
 SEDGWICK, ROBERT,
 SEE, A. B.,
 SELIGMAN, GEORGE W.,
 SELIGMAN, JEFFERSON,
 SELIGMAN, JOSEPH L.,
 SENFF, MRS. CHARLES H.,
 SETON, ALFRED,
 SEXTON, LAWRENCE E.,
 SEYBEL, DANIEL E.,
 SHAPIRO, D.,
 SHATTUCK, A. R.,
 SHEEHAN, WILLIAM F.,
 SHEETS, DR. E. A.,
 SHEFFIELD, JAMES R.,
 SHEFFIELD, MRS. JAMES R.,
 SHELTON, EDWARD W.,
 SHELTON, GEORGE R.,
 SHELTON, WILLIAM C.,
 SHEPARD, MRS. ELLIOTT F.,
 SHEPARD, FINLEY,
 SHEPARD, DR. GEORGE A.,
 SHILLABER, WM.,
 SHIPMAN, RICHARD D.,
 SHOEMAKER, HENRY W.,
 SHONNARD, HORATIO S.,
 SHONTS, T. P.,
 SIBLEY, MRS. H. W.,
 SIEDENBURG, JR., REINHARD,
 SIEGL, JACOB,
 SILLECK, JR., HENRY G.,
 SILLECK, JR., MRS. HENRY G.,
 SILLMAN, HARPER,
 SIMPSON, J. T.,
 SIMPSON, JOHN W.,
 SINCLAIR, MRS. JOHN,
 SINGER, ARTHUR J.,
 SKEEL, DR. FRANK D.,
 SKIDMORE, WILLIAM L.,
 SKINNER, M. P.,

SLADE, FRANCIS LOUIS,
 SLAUGHTER, R. B.,
 SLOCUM, JR., H. J.,
 SLOCUM, J. J.,
 SLOCUM, THOS. W.,
 SMIDT, MRS. G. L.,
 SMIDT, THOS.,
 SMILEY, DANIEL,
 SMILLIE, JAMES C.,
 SMILLIE, RALPH,
 *SMITH, DR. A. ALEXANDER,
 SMITH, AUGUSTINE J.,
 SMITH, MRS. CHARLES S.,
 SMITH, ELIAS D.,
 SMITH, PIERRE J.,
 SMITH, ROBERT K.,
 SMITHIERS, CHARLES,
 SMITHIERS, F. S.,
 SNOW, E. G.,
 SORCHAN, MRS. VICTOR,
 SPALDING, KEITH,
 SPARROW, MRS. EDWARD W.,
 SPEAR, JR., JAMES,
 SPEDDEN, FREDERIC O.,
 SPENCER, ALEXANDER H.,
 SPENCER, MRS. EDWARDS,
 SPERRY, WILLIAM M.,
 SPEYER, MRS. JAMES,
 SPITZNER, GEORGE W.,
 SPOFFORD, MRS. J. L.,
 SPRAGUE, MRS. FRANK J.,
 SPRIGG, JUDGE CARROLL,
 SPRING, MISS ANNA RIKER,
 SPURR, E. W.,
 SQUIBB, DR. EDWARD H.,
 SQUIRE, EBEN H. P.,
 STAFFORD, WILLIAM FREDERICK,
 STAFFORD, MRS. WILLIAM FREDERICK,
 STANTON, FRANK McMILLAN,
 STANTON, JOHN R.,
 STAPLES, MRS. JOHN J.,
 STARR, LOUIS MORRIS,
 STEARNS, LOUIS,
 STEBBINS, JAMES H.,
 STEELE, MRS. CHARLES,
 STEERS, J. RICH,
 STEIN, MRS. ALEXIS W.,
 STEINBECK, EDWARD,
 STEINMETZ, JOHN A.,
 STEPHENS, OLIN J.,
 STEPHENS, RODERICK,
 STEVENS, ALEXANDER H.,
 STEVENS, FREDERIC W.,
 STEVENS, OSCAR E.,
 STEVENS, RICHARD,
 STEVENS, MRS. RICHARD,
 STEWART, MRS. PERCY HAMILTON,
 STEWART, WILLIAM R.,

- STICKELS, EDWARD H.,
 STILLMAN, MRS. C. C.,
 STILLMAN, CHAUNCEY,
 STILLMAN, JAMES A.,
 STIMSON, MRS. FREDERIC,
 STIMSON, DR. DANIEL M.,
 STOCKMANN, MISS MARIE F. C.,
 STOKES, JAMES,
 STONE, MISS ANNIE,
 STONE, MISS ELLEN J.,
 STOUT, JOSEPH S.,
 STOUT, ANDREW V.,
 STOW, GEORGE G.,
 STRAIGHT, WILLARD,
 STRANGE, A. B.,
 STRAUSS, ALBERT,
 STRAUSS, CHARLES,
 STRAUSS, FREDERICK,
 STRAUS, H. GRANT,
 STRAUS, PERCY S.,
 STREAT, JAMES,
 STREET, W. A.,
 STRONG, JR., BENJAMIN,
 STRONG, RICHARD A.,
 STRONG, THERON G.,
 STROOCK, JOSEPH,
 STROOCK, LOUIS S.,
 STUART, ROBERT,
 STURGES, MRS. E. C.,
 STURGES, HENRY C.,
 SUCKLEY, MRS. R. B.,
 SULLIVAN, MRS. JAMES,
 SUTRO, LIONEL,
 SUYDAM, JR., LAMBERT,
 SWAN, JAMES A.,
 SWANSON, DR. F. J.,
 SWENSON, S. A.,
 SWORDS, WM. VOORIJS,
 TABER, MISS MARY,
 TABOR, F. H.,
 TAFT, HENRY W.,
 TAFT, WILLIAM HOWARD,
 TAG, ALBERT,
 TAILER, EDWARD N.,
 *TALCOTT, JAMES,
 TALMAGE, MRS. E. T. H.,
 TALMAGE, MRS. THOMAS HUNT,
 TAKENBAUM, MOSES,
 TATHAM, CHARLES,
 TAUSSIG, NOAH W.,
 TAYLOR, MRS. HENRY OSBORN,
 TAYLOR, HENRY R.,
 TAYLOR, JAMES B.,
 TAYLOR, LLOYD,
 TAYLOR, MOSES,
 TAYLOR, ROBERT C.,
 TAYLOR, WILLIAM A.,
 TAYLOR, WM. R. K.,
 TENNEY, C. H.,
 TENNEY, DANIEL G.,
 TERRY, MRS. JOHN T.,
 TERRY, JR., RODERICK,
 TERRY, WYLLYS,
 THACHER, ARCHIBALD G.,
 THACHER, MRS. GEORGE W.,
 THACHER, THOMAS,
 THAW, J. C.,
 THAYER, HARRY BATES,
 THOMAS, MRS. HOWARD L.,
 THOMAS, JR., SETH E.,
 THOME, CHAS. STOCKTON,
 THOMPSON, FERRINGTON M.,
 THOMPSON, MRS. J. TODD HUNTER,
 THOMPSON, WILLIAM BOYCE,
 THOMSON, GRAUD F.,
 THOMSON, DR. WILLIAM HANNA,
 THORLEY, CHARLES,
 THORNE, CHARLES STOCKTON,
 THORNE, MRS. EDWIN,
 THORNE, JONATHAN,
 THORNE, MRS. JONATHAN,
 THORNE, MRS. SAMUEL,
 THORNE, MRS. W. V. S.,
 THORNE, W. V. S.,
 THURBER, H. F.,
 TIERNEY, MYLES J.,
 TIERS, MRS. ALEXANDER H.,
 TIFFANY, LOUIS C.,
 TILT, ALBERT,
 TILTON, JOSEPH W.,
 TIMKEN, J. HENRY,
 TIMMERMAN, HENRY G.,
 TIMPSON, JAMES,
 TJADER, RICHARD,
 TOD, J. KENNEDDY,
 *TODD, H. H.,
 TODD, WALTER B.,
 TOLER, MRS. VIRGINIA W.,
 TOMBY, BORGFELDT,
 TONNELI, MRS. JOHN N.,
 TOWNSEND, MISS AMY C.,
 TOWNSEND, MRS. E. M.,
 TOWNSEND, EDWIN S.,
 TOWNSEND, HOWARD,
 TOWNSEND, ISAAC,
 TRIMBLE, MRS. RICHARD,
 TROESCHER, A. F.,
 TROWBRIDGE, FREDERICK K.,
 TUCKER, MRS. AGNES J.,
 TUCKER, CARL,
 TUCKERMAN, ALFRED,
 TUCKERMAN, PAUL,
 TURNBULL, ARTHUR,
 TURNBULL, MRS. RAMSAY,
 TURNBULL, WM.,
 TURNURE, GEORGE E.,

- TUSKA, BENJAMIN,
 TWEED, MRS. CHARLES H.,
 TWining, E. S.,
 UHL, OSWALD W.,
 UNDERWOOD, WILLIAM LYMAN,
 UPMANN, CARL,
 VALENTINE, MRS. PATRICK A.,
 VALENTINE, DR. WILLIAM A.,
 VAN BEUREN, JR., FREDERICK T.,
 VAN CORTLANDT, AUGUSTUS,
 VAN DER HOOGT, MRS. C. W.,
 VANDERGRIFT, S. H.,
 VANDERLIP, FRANK A.,
 VANDERPOEL, AMBROSE E.,
 VANDERPOEL, MRS. JOHN A.,
 VAN DER SMISSEN, DR. G. J.,
 VAN DYKE, R. B.,
 *VAN EMBURGH, D. B.,
 VAN GERBIG, BAREND,
 VAN INGEN, MRS. EDWARD,
 VAN INGEN, MRS. E. H.,
 VAN NORDEN, OTTOMAR H.,
 VAN NOSTRAND, B. T.,
 VAN SINDEREN, HOWARD,
 VAN SLYCK, GEORGE W.,
 VAN WINKLE, EDGAR B.,
 VARIAN, WILBUR L.,
 VARIAN, MRS. WILBUR L.,
 VERNAY, ARTHUR S.,
 VERNON, MRS. CATHERINE D.,
 VESPER, KARL H.,
 VIETOR, THOMAS F.,
 VILLA, ALFONSO P.,
 VINCENT, FRANK,
 VIRGIN, DR. FREDERIC O.,
 VOGEL, HERMAN,
 VON BERNUTH, JR., FRITZ,
 VON DREELE, WM. H.,
 VON GONTARD, MRS. ALEXANDER,
 VON LengerKE, JUSTUS,
 VON ZEDLITZ, MRS. ANNA M.,
 VUILLEUMIER, DR. JULES A.,
 WAGSTAFF, MRS. ALFRED,
 WAGSTAFF, C. DuBois,
 WAINWRIGHT, MRS. J. HOWARD,
 WALCOTT, FREDERIC C.,
 WALDO, R.,
 WALES, EDWARD H.,
 WALKER, BRYANT,
 WALKER, E. B.,
 WALKER, GUSTAVUS A.,
 WALKER, DR. JOHN B.,
 WALKER, JR., JOSEPH,
 WALLER, STEWART,
 WALLERSTEIN DR. MAX,
 WALSH, SAMUEL A.,
 WALTER, EDGAR,
 WALTER, MARTIN,
 WALTY, A. R.,
 WARBURG, PAUL M.,
 WARD, ARTEMAS,
 WARD, MRS. GEORGE CABOT,
 WARDNER, HENRY STEELE,
 WARDWELL, ALLEN,
 WARREN, MRS. J. HOBART,
 WARREN, LLOYD,
 WASHBURN, THOMAS G.,
 WASHBURN, WM. IVES,
 WATERBURY, JOHN I.,
 WATERBURY, MISS,
 WATSON, CHARLES F.,
 WATSON, THOMAS J.,
 WATT, THOMAS L.,
 WEATHERBEE, MRS. EDWIN H.,
 WEBB, MRS. ALEXANDER S.,
 WEBB, F. EGERTON,
 WEBB, J. GRISWOLD,
 WEBB, MRS. WILLIAM SEWARD,
 WEEKS, JAMES,
 WEEKS, JOHN E.,
 WEIGLE, CHARLES H.,
 WEIL, RICHARD,
 WEINIG, BERNARD,
 WEIR, MRS. C. GOUVERNEUR,
 WEITLING, WILLIAM W.,
 WELLS, OLIVER J.,
 WELSH, MRS. S. CHARLES,
 WERNER, C. H.,
 WESSEL, J. HENRY,
 WESSELL, ARTHUR L.,
 WEST, DR. WM.,
 WESTOVER, M. F.,
 WETMORE, EDMUND,
 WHEELER, WALTER S.,
 WHELOCK, MRS. G. G.,
 WHITE, A. M.,
 WHITE, HAROLD T.,
 WHITE, HORACE,
 WHITE, LEONARD D.,
 WHITE, MRS. STANFORD,
 WHITEHOUSE, J. HENRY,
 WHITEHOUSE, NORMAN,
 WHITEHOUSE, WILLIAM F.,
 WHITING, DR. CHARLES A.,
 WHITING, MISS GERTRUDE,
 WHITMAN, CLARENCE,
 WHITMAN, JR., WILLIAM,
 WHITNEY, RICHARD,
 WHITRIDGE, F. W.,
 WIBORG, F. B.,
 WICKERSHAM, GEORGE W.,
 WIGGLESWORTH, HENRY,
 WILKINS, F. H.,
 WILLCOX, WM. G.,
 WILLIAMS, ALEX. S.,
 WILLIAMS, ARTHUR.

WILLIAMS, C. S.,
 WILLIAMS, DAVID,
 WILLIAMS, GEORGE L.,
 WILLIAMS, MRS. PERCY H.,
 WILLIAMS, JR., RICHARD H.,
 WILLIAMS, WALDRON,
 WILLIAMS, WILLIAM,
 WILLIAMS, WILLIAM H.,
 WILLIAMSON, MRS. BUTLER,
 WILLIS, W. P.,
 WILLISTON, JAMES R.,
 WILSON, JAMES GODFREY,
 WILSON, M. ORME,
 WINGATE, GEO. W.,
 WINTER, JULIUS,
 WINTERROTH, MAJ. E. J.,
 WINTHIROP, JR., EGERTON L.,
 WISNER, CHARLES,
 WITHERBEE, FRANK S.,
 *WITTHAUS, DR. RUDOLPH A.,
 WITTMANN, JOSEPH,
 WOLF, ARTHUR D.,
 WOLFF, EMIL,
 WOOD, ARNOLD,
 WOOD, GILBERT CONGDON,

WOOD, J. WALTER,
 WOOD, WILLIAM CONGDON,
 WOODHOUSE COMPANY, J. S.,
 WOODRUFF, ALBERT C.,
 WOODWARD, KENNETH N.,
 WOODWARD, MRS. WILLIAM,
 WOOLLEY, C. M.,
 WORCESTER, WILFRED J.,
 WORK, BERTRAM G.,
 WORK, J. HENRY,
 *WORRALL, P. B.,
 WORTLEY, R. M. STUART,
 WRIGHT, HAL,
 WRIGHT, J. DUNBAR,
 WYCKOFF, DR. PETER BROWN,
 WYCKOFF, MRS. PETER BROWN,
 YOUNG, A. MURRAY,
 *ZABRISKIE, ANDREW C.,
 ZABRISKIE, MISS ETHEL,
 ZENTGRAF, REV. GEORGE J.,
 ZINN, GEORGE,
 ZINSSER, AUGUST,
 ZINSSER, MRS. AUGUST,
 ZINSSER, JR., AUGUST,
 ZOLLER, CHARLES,

Corresponding Members

GILFEDDER, T. P.,
 GILLESPIE, T. H.,
 JOHNSTON, SIR HARRY H.,

LESOUËF, W. H. DUDLEY,
 MILLWARD, RUSSELL HASTINGS,
 STURTEVANT, LIEUT. C. G.,

TYRWHITT-DRAKE, G.,

*DECEASED.

Summary of Membership

Benefactors	6
Founders in Perpetuity	13
Founders	19
Associate Founders	4
Patrons	33
Life Members	302
Fellows	34
Annual Members	1,791
Honorary and Corresponding Members.....	15
	2,217

Qualifications for Regular Membership

Annual Members	\$ 10	Associate Founders	\$ 2,500
Life Members	200	Founders	5,000
Patrons	1,000	Founders in Perpetuity.....	10,000
Benefactors			\$25,000

Form of Bequest

I do hereby give and bequeath to the "NEW YORK ZOOLOGICAL SOCIETY," of the City of New York, ...

.....

.....



JAPANESE SIKA DEER

REPORT OF
THE EXECUTIVE COMMITTEE

TO THE BOARD OF MANAGERS.

THE Executive Committee respectfully submit the following report to the Board of Managers for the year 1916:

The Committee regret to announce the death on December 15, 1916, of Mr. H. Casimir deRham, a member of the Board of Managers since 1899 and an Associate Founder. Mr. deRham was one of the early representatives of the Boone and Crockett Club on the Board and was greatly interested in the National Collection of Heads and Horns, to which he contributed very liberally.

The Committee also report with regret the death of Mr. James J. Hill, on May 29, 1916. Mr. Hill was a Founder in Perpetuity, and a member of the Board of Managers since 1902.

Resolutions passed on the occasion of the deaths of the above Managers appear at the end of this report.

Mr. Edmund C. Converse was elected to the Board of Managers on April 13, 1916, to fill the vacancy in the Class of 1918, caused by the death of the late Samuel Thorne.

Mr. A. Barton Hepburn was elected to the Board of Managers on September 26, 1916, to fill the vacancy in the Class of 1917, caused by the death of the late James J. Hill.

MEMBERS.

During the past year 193 new members have been added to the Society: 176 Annual Members, 13 Life Members, and 4 Fellows. Resignations and deaths, however, offset this gain, so that the total membership shows but a slight increase over the previous year. The membership as of January 1, 1917, is as follows:

Benefactors	6
Founders in Perpetuity	13

Founders	19
Associate Founders	4
Patrons	33
Life Members	302
Fellows	34
Annual Members	1,791
Honorary and Corresponding Members	15
	2,217

ATTENDANCE.

The attendance at the Park and the Aquarium for 1916, as compared with 1915, has been as follows:

	Park	Aquarium
1916	1,656,820	1,499,667
1915	1,780,077	1,538,831

The decrease at the Aquarium is primarily due to the continuance of war conditions which has affected all activities along the water front. Special and adverse conditions occurred during the past year, by reason of the car strike on the surface lines, and more particularly, because of the epidemic of infantile paralysis, which, of course, greatly diminished the attendance of children at the Zoological Park.

COLLECTIONS AT THE PARK.

A census of the animals in the Zoological Park, compiled January 1, 1917, is as follows:

	January 1, 1916		January 1, 1917	
	<i>Species</i>	<i>Specimens</i>	<i>Species</i>	<i>Specimens</i>
Mammals	211	636	207	617
Birds	813	2,773	816	2,788
Reptiles and Amphibians	157	791	98	782
	1,181	4,200	1,121	4,187

The health of the collections on the whole continues to be

very satisfactory, and the only serious loss during the year was the unexpected death of the West African giraffe.

The Loring Expedition returned from Africa, having established important connections which will result in our securing many valuable animals in the future from that continent. This expedition enriched the collections at the Park by the addition of the following:

	<i>Species</i>	<i>Specimens</i>
Mammals	13	26
Birds	25	58
Reptiles	14	95
	52	179

The most important event of the year in this department was the purchase of a collection of marsupials and other animals and birds from Australia, including the following:

1 pr. Sloth Bears.	2 pr. Ibis.
1 pr. Wombats and young.	2 Wedgetailed Eagles.
1 pr. Parry Kangaroos.	2 Frilled Lizards.
1 pr. Walaroos.	3 Laughing Jackasses.
1 pr. Red Kangaroos.	1 Thicknee.
1 pr. Agile Wallabies.	2 Brush Turkeys.
1 Himalayan Bear.	1 Mallee Hen.
1 Crimson Wing.	8 Water Dragons.
3 pr. Tasmanian Devils.	4 Bar-shouldered Doves.
1 pr. Black Swamp Wallabies.	7 Crested Pigeons.
2 Tree Climbing Kangaroos.	3 Bronzewing Pigeons.
1 pr. Rock Wallabies.	35 Diamond Doves.
1 pr. Island Kangaroos.	3 King Parrots.
1 pr. Grey Phalangers.	1 Princess Alexandra Parakeet.
6 Flying Phalangers.	4 Rosellas.
2 Cape Hyrax.	2 Pale-headed Rosellas.
3 Plovers.	2 Vasa Parrots.
1 Shrike.	1 Bowerbird.
2 Magpies.	1 Brush Bronzewing Pigeon.
1 Giant Petrel.	2 Wonga-Wonga Pigeons.
2 Black Swans.	9 Peaceful Doves.
6 White-winged Choughs.	1 Fraser's Lorikeet.
10 Long-necked Tortoises.	1 pr. Kea Parrots.

These animals were brought by Mr. Ellis Joseph directly from the Antipodes, and arrangements have been made with Mr. Joseph for similar shipments. Never before has so complete a collection of marsupials been placed on exhibition in this country.

A large collection of birds, including 216 pheasants, representing 15 species was presented by Col. Anthony R. Kuser.

The return of the Tropical Research Expedition to British Guiana under Mr. William Beebe increased our collections by the following:

	<i>Specimens</i>
Mammals	31
Reptiles	117
Birds	154
Fishes	13

Mr. Raymond L. Ditmars, Curator of Reptiles at the Zoological Park, returned from an expedition to South Carolina, during the latter part of May with 560 specimens, representing 40 species of reptiles and amphibians.

COLLECTIONS AT THE AQUARIUM.

A census of the exhibits at the Aquarium taken January 1, 1917, shows the following results:

	January 1, 1916		January 1, 1917	
	<i>Species</i>	<i>Specimens</i>	<i>Species</i>	<i>Specimens</i>
Fishes	140	3,186	149	4,196
Reptiles	23	95	19	123
Amphibians	14	166	8	365
Invertebrates	21	2,238	21	1,306
Mammals	2	3	2	2
	200	5,688	199	5,992

The collections have continued in excellent condition and all exhibition space is filled to its utmost capacity. The construction of a large number of new tanks with increased depth has added greatly to the capacity of the building and to the interest of the exhibits.

The principal additions during the year were about 1,000 tropical fishes from Florida, five porpoises, an eight-foot shark, and a manatee from the Amazon. The porpoises and shark died during the year, but the manatee is living and is in excellent condition. The collection of tropical fishes is an unusually fine one.

The only serious loss during the year was a collection of fishes secured in the Bahama Islands, which was destroyed during a hurricane in July.

Mr. Chapman Grant resigned during the year and re-entered the United States Army.

An application for \$90,000 for needed alterations to the Aquarium, was made to the Board of Estimate and Apportionment, but owing to the financial condition of the City there is no possibility of favorable action within the next few years. The proposed alterations provide for the transfer of the machinery from its present unsanitary quarters to the basement under what is now the front entrance. This would put our engineers in dry and safe quarters, instead of their present exposure to high tides which sometimes rise 18 inches in the fire room, requiring our men to stand in water while at work, and threatening to extinguish the fires. The space made vacant by the removal of the machinery will be utilized for the installation of new and deep tanks, adding nearly 20% to the exhibition space of the Aquarium building. A new story will be added to the front of the building, which will be devoted to administration and scientific work. The success of the tanks, already deepened, indicate that these comparatively economical alterations (costing less than \$100,000), would greatly add to the sanitary conditions of the present building and to the great increase in the number and attractiveness of the exhibits.

MAINTENANCE.

The sum of \$197,074.35 was provided by the City for the maintenance of the Zoological Park for the year 1916, being \$3,000 less than the maintenance for the preceding year. This amount was insufficient for the proper upkeep of the Park. Although the year closed without a deficit in this fund, it was accomplished only by taking from the Animal Fund nearly \$10,000, which was absolutely required for repairs to buildings. After strenuous protest by the Society, the appropriation for 1917 was somewhat increased, and the sum of \$199,560 was provided. This amount does not and cannot provide an allowance for repairs, which are yearly becoming an increasing burden. It also makes no provision for the 10% increase in the pay of the low-salaried employees to correspond with the increase granted by the City in their other departments.

The Society feels that its employees have been discriminated against by the City in this failure to recognize the increased



ISLAND KANGAROOS

cost of living, which is especially shown on our men by reason of the very low scale of salaries at the Park. In order to remedy this injustice, the Society has decided to contribute a sum between \$11,000 and \$12,000, to be raised by special subscription among the Board of Managers in order to provide in 1917 a 10% increase over the salaries of all the employees of the Park and Aquarium whose annual pay is less than \$1,300. There is every indication that this amount will be furnished by the Board of Managers.

Another year, the Society must have an additional \$12,000 for its employees to take the place of this voluntary subscription, and also a similar amount must be provided for restorations and repairs, as the Society cannot continue to assume this burden, which properly belongs to the City itself.

The sum of \$47,000 was provided by the City for the maintenance of the Aquarium during 1916, and proved sufficient in spite of the increased cost of all supplies, which necessitated extreme economy on the part of the management, but in 1918 increases in the salaries and an allowance for repairs must be made.

The total annual cost to the City for the maintenance of these two institutions for the year 1916 in spite of the reduced attendance is between 7 cents and 8 cents for each visitor.

CO-OPERATIVE STORE.

In order to assist the employees of the Park to meet the strain of the increased cost of living, the Society has established a Co-operative Store for their benefit, and has invested \$700 in the stock, besides paying one-half of the salary of an attendant.

FINANCES.

The lack of an adequate Endowment Fund to supplement the income derived from Annual Members has cramped the Society's activities in every direction, and nothing except the most rigid economy and disregard of all opportunities to expand has enabled your Committee to keep the expenditures during 1916 within our available resources. The balances to the credit of

the several funds in the Farmers' Loan and Trust Company, as of December 31, 1916, are as follows:

Income Account	\$10,968.47
Animal Fund	2,852.80
Endowment Fund	4,512.80
Cadwalader Animal Fund	500.00
Stokes' Bird Fund	58.54
Art Gallery Fund	6,764.92
Tropical Research Fund	17.57
Library Fund	295.29
National Collection of Heads and Horns	78.89
Wild Life Fund	729.30
Publication Fund	6,000.00
Heads and Horns Building Fund	5,000.00
Improvement and Repair Fund	1,576.65
Total	\$39,355.23
Carnegie Pension Fund Income Account:	
Farmers' Loan and Trust Company.....	\$2,416.91
Corn Exchange Bank (Bronx)	499.95
	\$2,916.86

The Farmers' Loan and Trust Company of 22 William Street was designated Assistant Treasurer, and Mr. R. L. Cerero, Bursar, of the New York Zoological Society, in January, 1916. These new arrangements have worked most successfully.

Mr. H. J. Shorter resigned as Assistant Secretary in July, 1916.

INCOME ACCOUNT.

The general income of the Society, including the income from the Endowment Fund, was insufficient to meet current expenses of the past year, although every effort was made by your Committee to make it do so; and it was necessary again to trench upon the cash balance on hand at the beginning of the year. One of the heavy expenditures of this fund is the continuous burden which the Society has assumed towards the Carnegie Pension Fund, which annually amounts to the sum of \$3,915.

As a result of these drains on the Society's resources, the balance on hand at the close of the year was \$10,968.47, or about

\$12,000 less than the balance of the previous year. This is the weakest point in the finances of the Society, and only a substantial increase in membership, or better still, in the Endowment Fund, ever will enable the Society to fulfill its functions and extend its activities.

ANIMAL FUND.

The very substantial decrease during the year of the return from the privileges at the Park, and the continued use of gate receipts for repairs to buildings, (funds for which should have been provided for by the City), resulted during the year in a badly depleted Animal Fund. To meet this, an appeal was sent to members of the Society for subscriptions to this fund; and during the year the following were received:

Ogden Mills	\$1,000.00
Watson B. Dickerman	500.00
Lispenard Stewart	500.00
James B. Ford	500.00
Henry M. Tilford	500.00
In Memoriam	500.00
George C. Clark	250.00
J. P. Morgan	250.00
Jacob H. Schiff	250.00
Frank K. Sturgis	250.00
Louis Boury	150.00
Mrs. Wm. G. Nichols	100.00
L. S. Thompson	100.00
Abram G. Nesbit	100.00
Miss Eleanor deG. Cuyler	100.00
John D. Archbold	100.00
James Douglas	100.00
Mrs. Finley J. Shepard	100.00
Mrs. H. P. Davison	100.00
William R. Coe	100.00
William Church Osborn	100.00
Miscellaneous	2,085.00
Total	\$7,735.00

Thanks to this assistance, the Society was able to maintain its collections at full strength. There was a balance of \$2,852.80 on hand, December 31, 1916.

During 1917, about \$14,000 more must be raised by special subscription for this purpose.

ENDOWMENT FUND.

During the year, \$8,750, representing an additional 35%, was received on account of the bequest of Mrs. Morris K. Jesup of \$25,000, which makes a total of 90% received of this legacy up to date. In addition to this, \$2,700 in Life Membership fees were added to this fund, making a total of \$11,450 received during the year.

The cash invested during the year was as follows:

\$9,000 Baltimore, Ohio, Pittsburgh, Lake Erie & West Virginia, Refunding 4% Bond	\$7,920.00
\$1,000 N. Y. L. & W. Term, 4% Bonds	900.00

The Endowment Fund now amounts to \$351,762.80. This fund is invested in securities yielding a net income at the average rate of .4381 plus per annum.

On December 31, 1916, there was an uninvested balance of \$4,512.80 on hand.

CADWALADER ANIMAL FUND.

This fund consists of the income from the fund of \$20,000, bequeathed to the Society by Mr. John L. Cadwalader, deceased, which is available only for the purchase of animals for the Park. On January 1, 1916, there was a cash balance of \$788.89. The income during the year amounted to \$1,000, and animals at the total cost of \$1,288.89 have been purchased. This fund closes the year with a cash balance of \$500.

STOKES' BIRD FUND.

The income from this fund, which consists of \$5,000 bequeathed to the Society by the late Miss Caroline Phelps Stokes, is devoted to the protection of bird life throughout the country.

On January 1, 1916, there was a balance on hand of \$277.29, and during the year income was received in the amount of \$200. The expenditures have amounted to \$118.75, leaving a cash balance on hand December 31, 1916, of \$58.54.

ART GALLERY.

The Art Gallery of the Society has been enriched during the past year by a life-sized painting of the Grant Caribou, and of the Musk-Ox, both in their native surroundings, by Carl Rungius. A very handsome life-size bronze figure of Dinah, the gorilla, was presented to the Society by Mr. Watson B. Dickerman at a cost of \$880.25. This work was carried out most successfully by Mr. Eli Harvey, and is a very notable addition to the Art Gallery of the Society. A picture of the American Bison showing its former abundance is in course of preparation by Mr. Rungius.

During the year, the sum of \$3,770.65 was transferred from the Income Account to this fund, and subscriptions were received in the amount of \$4,250, which made a total amount available for expenditure of \$8,020.65. The expenditures during the year amounted to \$1,255.73, leaving a cash balance on hand December 31, 1916, of \$6,764.92.

Subscriptions of \$250 for 1916 to this fund have been received from the following:

Ogden Mills, C. F. Dieterich, H. M. Tilford, C. H. Dodge, Lisenard Stewart, George J. Gould, Watson B. Dickerman, Mortimer L. Schiff, Joseph McAleenan, F. K. Sturgis, Percy R. Pyne, George F. Baker, F. G. Bourne, James J. Hill, Grant B. Schley, Edward S. Harkness and Andrew Carnegie.

TROPICAL RESEARCH FUND.

During the year, Mr. Andrew Carnegie subscribed \$1,000 to this fund, which, together with the amount on hand January 1, 1916, made \$6,000 available for expenditure. The expenses amounted to \$5,982.43, leaving a small balance of \$17.57 on hand December 31, 1916.

LIBRARY.

The Library Fund is supported by transfers from the general Income Account of the Society. During the year, one such transfer was made of \$500 which with the balance of \$94.68 on hand, January 1, 1916, made a total of \$594.68 available for expenditure. Books, periodicals, pamphlets, etc., have been pur-



PUBLIC DRINKING FOUNTAIN NEAR THE FOX DENS

chased to the extent of \$299.39, and the account shows a balance of \$295.29, on December 31, 1916.

The Society hopes during the coming year to secure \$5,000 for the purchase of books and periodicals especially devoted to the conservation of wild life throughout the world, so that the Zoological Park Library may ultimately contain all the literature on this subject which is published. The books themselves are not expensive, but the services of a trained librarian are necessary to collect and tabulate the widely scattered and fugitive literature on the subject. A complete conservation library would be of great service to the great cause of wild life protection.

NATIONAL COLLECTION OF HEADS AND HORNS.

The only sources of income for this fund are transfers from the general Income Account of the Society, and private subscriptions. One transfer of \$600 was made during the year. Mr. Watson B. Dickerman subscribed \$175, and Mr. John J. Paul, \$15. These amounts together with the balance of \$320.36 on hand January 1, 1916, made a total of \$1,110.36 available for expenditure.

Heads and horns at a total cost of \$1,131.47 have been purchased, and the account closes the year with a balance of \$78.89.

Among the acquisitions to the collection during the year have been a world-record Himalayan Ibex Head; a magnificent pair of antlers of the *Megaceros* or Irish Elk, secured from the Gilford collection at Orange, N. J.; a splendid Tibetan Argali Head, gift of Mr. W. B. Dickerman; a pair of antlers of the Tian Shan Wapiti, gift of Col. H. Appleton, of the British Army; a fine pair of mounted heads of the Philippine Water Buffalo, gift of Hon. Francis Burton Harrison, and a Musk-Ox skull and horns from Point Barrow, Alaska, gift of Charles D. Brower.

HEADS AND HORNS MUSEUM.

The most important event during the year was the raising of the sum of \$100,000, chiefly through the energy of the Director of the Park, Dr. Hornaday. This sum will be devoted to the erection of a museum to contain the Society's magnificent collection of heads and horns, now rapidly becoming the finest in

the world. This museum will be constructed on the east side of Baird Court, in harmony with the existing buildings. The building will be presented by the Society to the City, and the collections, when installed therein, will be thrown open to the public. Mr. Henry D. Whitfield has been engaged as architect, and the plans and detail drawings are at present under consideration by the Executive Committee. The following persons have subscribed \$10,000 each:

Mrs. F. F. Thompson,	In memory of Samuel Thorne,
Mrs. Russell Sage,	by his family,
John D. Archbold,	Louise W. Carnegie,
Jacob H. Schiff,	Andrew Carnegie,
George F. Baker,	Edmund C. Converse,
	"A Friend."

WILD LIFE PROTECTION FUND.

The expenditures against this fund during the year amounted to \$100.09. The balance on hand January 1, 1916, was \$648.64, and receipts in the amount of \$180.75 have been received from the sale of Our Vanishing Wild Life. This fund closes the year with a cash balance of \$729.30.

It will be observed that since 1914 the expenditures of the Society for this cause have been very small, because of the fact that the Society's campaigns are now financed by the income of the Permanent Wild Life Protection Fund.

PUBLICATION FUND.

During the year, a new fund known as the Publication Fund was started, and the following subscriptions were received:

Robert S. Brewster	\$1,000.00
F. A. Schermerhorn	1,000.00
Edward S. Harkness	1,000.00
Cleveland H. Dodge	1,000.00
Emerson McMillin	1,000.00
Anthony R. Kuser	1,000.00
Total	\$6,000.00

There have been no expenditures to date, but two volumes are now in the hands of the printer.

During the year a new publication, known as *Zoopathologica*, was established to contain such technical medical reports and articles from the Park or from the Aquarium as are unsuitable for the more general circulation of *Zoologica*. One number, entitled "Some New Species of Parasitic Trematodes of Marine Fishes," by Dr. G. A. MacCallum, has been published. *Zoopathologica* is issued free to members only on application.

The Society is about to undertake the publication of a very elaborate book of photographs of "Wild Animals in the Zoological Park" for free distribution among its members, and an elaborate illustrated "Report on the Tropical Research Station" is now in type and will soon appear. Other volumes in hand are "The Care of Wild Animals in Captivity," and "The Care of Fishes in Captivity."

Eventually, about \$4,000 more will be needed to complete the above program.

PARK IMPROVEMENT AND REPAIR FUND.

The schedule of repairs and improvements at the Park, calling for an expenditure of \$10,000 for the year 1916, was approved by your Committee, but it was found that the gate receipts had seriously diminished during the year and amounted to only \$8,455.10. The sum of \$959 was received from the N. Y. Association for Improving the Condition of the Poor, and expended for labor in accordance with the wishes of that body. The schedule of repairs, etc., was reduced accordingly. Nevertheless, extensive repairs were made to the Small-Mammal House, Shelter Pavilion, Musk-Ox Fences, Wild-Fowl Pond, New Storage Shed, Concrete Benches, Guard Rails, East Side improvements, and a large amount of work on walks and roads. This work will be continued during 1917, but on a strictly limited scale.

CARNEGIE PENSION FUND.

The fund of \$100,000 received from Mr. Andrew Carnegie, produced \$4,335 during the year, and as the total contribution of the Society was \$8,250, the Society was obliged to make up out of its general Income Account the deficit of \$3,915. This is a serious matter, and steps must be taken to increase the prin-

cipal of this Pension Fund. Provision should be also made for the widows of employees, otherwise a great injustice may be perpetrated against some of the most faithful members of our staff. At least \$150,000 additional is required for these two purposes. During the year, the employees paid into the Pension Fund Income Account \$3,144.39. On December 31, 1916, there was a balance on hand of \$26,205.61, of which \$23,288.75 has been invested in quickly convertible securities, and \$2,916.86 remains on deposit.

ANIMAL HOSPITAL.

The Animal Hospital has been completed and turned over to the Society at a cost of \$17,833, and has been of great service in providing quarters for the proper quarantine of sick animals. It has proven one of the most valuable and important buildings in the Park.

BOAT HOUSE DOCK.

A new concrete dock at a cost of \$3,548.27 was constructed during the year at the lower end of Bronx Lake, and has added greatly to the safety of those using the boats. This was paid for out of the funds of the privilege business, and is one of the reasons why the returns to the Animal Fund were so small.

WILD-FOWL POND.

The bottom of the Wild-Fowl Pond was completely lined with concrete during the year at a cost of \$3,715.79.

PHEASANT MONOGRAPH.

The first volume of the Pheasant Monograph will appear in 1917. The fact that the plates for the last three volumes are stored in Vienna until the end of the war, will prevent the completion of this great monograph as originally planned. As has been repeatedly stated, only 650 copies of this monograph will be published, and the cost will be \$250 a set. Those desiring copies can place their subscriptions on record at the Society's office.

RATTLESNAKE SERUM.

The Society expects to secure from Dr. Vital Brazil of Sao Paulo, Brazil, 250 tubes of rattlesnake serum, of which 50 will be retained by the Society, and 200 will be turned over to the Surgeon General of the U. S. Army for use among the troops on the Mexican border.

MEDICAL DEPARTMENT.

The general health of the animals has remained good during the year, and now that we have a hospital for the proper care of the animals, our losses will probably be reduced to a minimum. The arrangements for the disposal of dead animals with the Prosector, Dr. George S. Huntington, and with the American Museum of Natural History, are working smoothly. Whatever autopsy is needed for Park purposes, it is performed at the Park, and the skeleton and skin are sent for mounting purposes to the American Museum of Natural History. All tissues and soft parts, including also such bony structures as are not needed by the American Museum, are turned over to the Prosector for his research work.

TROPICAL RESEARCH STATION.

The Zoological Society's Tropical Research Station was established in British Guiana, early in 1916, under the personal direction of its Director, Mr. William Beebe. Mr. Beebe was ably assisted throughout the year by Mr. G. Inness Hartley, as Research Associate, and Mr. Paul G. Howes, Research Assistant. The site selected for the Station was at the confluence of the three great rivers Essequibo, Cuyuni and Mazaruni.

The locality chosen proved exceedingly rich in wild life, and it is no exaggeration to state that the workers reaped an exceptionally rich harvest of results.

In the autumn the whole party returned to New York and at once entered upon the exploitation of the results of the tropical work. In the spring of 1917, there will appear, as the first annual report of the Station, a large illustrated volume, which will be a revelation of zoological work in a new field. In addition

to that, much material remains to be worked up at home in 1917, by Mr. Beebe and Mr. Hartley.

GAME PROTECTION.

During the year 1916, Dr. Hornaday diligently promoted the interests before Congress of the Chamberlain-Hayden bills for the making of federal game sanctuaries in national forests. Both bills were greatly hindered in their progress by the great preparedness measures, and a large group of other bills of paramount importance to the nation at large.

In spite of liberal assistance, both in and out of Congress, and persistent attempts by the members of both Houses, it finally proved impossible to bring either bill to a vote. There is good ground for the belief that could either bill have been brought to a vote, it would have been passed by a large majority, though not without some opposition.

The next matter of importance was the effort made in eighteen states west of the Mississippi River for long, close-season laws to save the sage grouse, both pinnated and sharp-tail, and other grouse and quail from the extermination that seems about to overwhelm them. Undoubtedly, some practical results will be secured in some of the 18 legislatures in session during the winter of 1917.

RECEPTIONS.

American Association for the Advancement of Science.—On December 27, 1916, the Zoological Society entertained the members of the American Association for the Advancement of Science at the Aquarium. The entertainment was in the form of a smoker and refreshments were served. Five hundred and twenty members of the Association were present.

Reception at Aquarium.—The Annual Reception to members was held at the Aquarium on Monday evening, May 1, 1916. An attendance of about 400 was noted. Members of the Board of Managers and their wives acted as a Reception Committee.

Ladies' Day and Members' Day were consolidated and the meeting was held at the Zoological Park on Thursday, May 18, 1916.

MEMORANDUM OF MEETINGS, 1917.

Annual Meeting of the Society,

JANUARY 9, 1917, 8:30 P. M.

Hotel Waldorf-Astoria.

MEETINGS, BOARD OF MANAGERS.

Annual Meeting,

Park Meeting,

January 16, 1917, 3:00 P. M.

May 17, 1917, 2:30 P. M.

Down Town Association. Preceded by Luncheon at 1:30 P. M.

Annual Dinner,

February 1, 1917, 8:00 P. M.

Courtesy of C. Ledyard Blair, Esq.

MEETINGS—EXECUTIVE COMMITTEE.

January 11,

May 10,

February 8,

June 14,

March 8,

October 11,

April 12,

November 8,

December 13.

Members' Reception at Aquarium,

April 30, 1917, 8:30 P. M.

Members' Day and Ladies' Day at Zoological Park.

May 17, 1917, 3:00 P. M.

Elections.—At the Annual Meeting of the Society in January, 1916, the following Managers were elected:

F. Augustus Schermerhorn,

Frederick G. Bourne,

Percy R. Pyne,

Mr. Austin Wadsworth,

George B. Grinnell,

Emerson McMillin,

George C. Clark,

Anthony R. Kuser,

Cleveland H. Dodge,

Watson B. Dickerman,

C. Ledyard Blair,

Mortimer L. Schiff.



WILD RICE

Dissension and strife never disturb the peaceful beauty of this quiet place.

Annual Dinner.—The Seventh Annual Dinner of the Board of Managers was held through the courtesy of Mr. F. Augustus Schermerhorn, at the Metropolitan Club, on Tuesday, February 10, 1916. Short addresses were made by Prof. Henry Fairfield Osborn and Mr. Madison Grant. Mr. Raymond L. Ditmars, Curator of Reptiles at the Zoological Park, exhibited several reels of extremely interesting pictures, showing the life of animals at the Park.

Spring Meeting.—The Spring Meeting of the Board of Managers was held in the Administration Building of the Zoological Park on Thursday, May 18, 1916, at 2:30 o'clock P. M. A luncheon in the Rocking Stone Restaurant at the Park was served at 1:30 o'clock.

BRONX PARKWAY COMMISSION.

The rapid cleaning of the Bronx River through the energies of the Bronx Parkway Commission has resulted in the general improvement of water conditions in Bronx Lake, rendering boating and other forms of recreation much more sanitary and wholesome. This Commission has now acquired substantially all of the land between Bronx Park and White Plains and is proceeding rapidly with developments. When completed, the Zoological Park will form the southern end of one of the greatest parkways in the world, extending north from 180th Street about seventeen miles to Kensico Dam, and connecting with the vast series of lakes, and state roads belonging to the new Croton water system.

AUDITING.

Upon the authorization of your Committee, the auditors Messrs. Marwick, Mitchell, Peat & Company, made another examination of the system of receiving supplies at the Park during the year 1916, and reported thereon with certain recommendations which have been adopted.

They are at present making the usual audit of the finances of the Society for the year, which is being greatly facilitated by the new system of checking the accounts quarterly. Their report, as well as that of the Auditing Committee, will immediately follow the report of the Treasurer.

ACKNOWLEDGMENTS.

The relations with all departments and officials of the City's government, and especially with the Park Department, have continued to be most cordial, and your Committee are greatly indebted to these officials, as well as the members of the Board of Estimate and Apportionment, for their support and co-operation during the past year.

The Directors of the Park and the Aquarium, and their respective staffs, have been most zealous and energetic in the performance of their duties, and the Society enters upon this new year with the assurance of an ever-increasing sphere of activity and usefulness.

Respectfully submitted,

MADISON GRANT, *Chairman*,

PERCY R. PYNE,
WILLIAM WHITE NILES,
WM. PIERSON HAMILTON,
FRANK K. STURGIS,

LISPENARD STEWART,
WATSON B. DICKERMAN,
ANTHONY R. KUSER,
HENRY FAIRFIELD OSBORN,
Ex-Officio.

Extracts from the Minutes
of the
Executive Committee of the Board of Managers
of the New York Zoological Society

June 8, 1916

on the occasion of the

Death of James J. Hill

Resolved. That the Executive Committee of the New York Zoological Society desire to place on record, their deep sense of loss in the death of Mr. James J. Hill, a member of the Board of Managers since January, 1902.

January 16, 1917

on the occasion of the

Death of Mr. H. C. deRham

Resolved. That this Board desire to place on record, their deep sense of loss in the death of its associate, Mr. H. Casimir deRham, who joined the Board of 1899, and to enter upon the minutes of this meeting an appreciation of his kind and sympathetic character, and his deep and long devotion to the interests of the New York Zoological Society.



AGILE WALLABY

REPORT OF THE DIRECTOR OF THE ZOOLOGICAL PARK

TO THE BOARD OF MANAGERS.

NOTWITHSTANDING the handicap of an awful scourge of infantile paralysis, strikes on transportation lines, high prices and scarcity of animals, the Zoological Park has scored a fairly successful year. The drop in attendance, of 123,257, was this year wholly due to infantile paralysis and strikes on street railways, and the only cause for surprise is the fact that the decrease in attendance was not three or four times greater than it really was.

During the entire summer the Park was so destitute of children that it reminded one of a deserted village. The attendance for the year was as follows:

	1916	1915
January	67,129	80,606
February	38,791	123,466
March	79,645	105,286
April	175,002	142,497
May	233,425	245,483
June	170,582	206,945
July	235,873	233,790
August	185,965	171,218
September	175,934	159,617
October	143,948	167,210
November	84,712	98,366
December	65,814	45,493
	1,656,820	1,780,077

IMPORTATIONS OF ANIMALS FROM AFRICA AND ELSEWHERE.

During the year 1916 three notable special efforts were made for the purpose of increasing the collections. In British Guiana, at the Society's Tropical Research Station, Mr. William Beebe

and his assistants captured and purchased an important series of mammals, birds and reptiles for the Park. The total of these shipments amounted to the following:

Mammals	31
Reptiles	117
Birds	154
Fishes	13

Slowly, but surely, the American wild animal market is adjusting itself to the new conditions created by the war, and new channels for supplies are being opened. It is perfectly evident that the German dealers will, at the close of the war, find very many of their old hunting grounds closed to them, and for a long period. It is more than likely that from this time henceforth, English dealers will possess the animal trade with India, the Malay Settlements outside of the Dutch East Indies, German East Africa and very much more of the Dark Continent. Hereafter Frenchmen will control the wild animal trade of the French Congo, and there will be few regions left to the German dealers that are well stocked with big game.

In view of this certainty, it is well for all Americans who need, or who ever may need, wild animals, to take thought for the morrow.

One of the first results of the present situation will be the establishing of direct communications with Africa. The close of the war quickly will be followed by the inauguration of a regular line of passenger steamers between South Africa and New York. But for the war, such a line would to-day be in operation!

It needs no effort of the imagination to picture the possibilities in a direct line from Cape Town or Durban to New York of importing animals by a short haul along the line of least resistance. With the co-operation that we may reasonably expect from the Union Castle Line, which surely will do as well in freight rates on wild animals as the Hamburg-American Line has for years done by the Hagenbecks, our African animals should cost us about thirty per cent. less than we have all these years been paying the German dealers for animals shipped first from Africa to Central Europe, and thence to America.

Last summer we invited the Zoological Society of Philadelphia and the National Zoological Park of Washington to join us,

on a partnership basis, in sending an agent to South Africa after as many menagerie animals as he could procure. The invitation was promptly accepted, and the idea was carried into effect. Mr. J. Alden Loring, of Owego, was chosen as the active agent, and in spite of all drawbacks he sailed on July 21, direct for Cape Town. In view of the fact that it had been quite impossible to ascertain in advance what animals could be bought or caught in South Africa on short notice, the whole venture was nothing less than a leap in the dark.

The U. S. Department of Agriculture relaxed its rigid embargo on imports of ruminant animals from Africa sufficiently to devise a special set of regulations for gathering, feeding on American food, shipment and quarantine, by which our undertaking was brought within the bounds of possibilities. But for this kind co-operation on the part of Dr. Melvin and Dr. Pope, absolutely nothing could have been done. We shipped to Africa (at a cost of over \$400), 40 bales of hay and 4,628 pounds of grain; the latter sealed in air-tight cases.

At Port Elizabeth, Mr. Loring was heartily encouraged and assisted by American Consul E. A. Wakefield, who did everything in his power to promote the success of the enterprise. But in eastern Cape Colony there were practically no wild animals available and our agent was forced to look further north.

In Pretoria, the Director of the National Zoological Gardens, situated there, Dr. A. Haagner, at once became interested in our undertaking, and began to work for its success. Largely through his good will and active assistance, a collection finally was brought together, and shipped to Boston on November 27, on the steamship *Cluny Castle*.

The *Cluny Castle* reached Boston on January 2, 1917, with practically no losses to report. In view of the fact that the animals had been in their crates for 47 days, the low death rate was remarkable. The landing of the shipment in Boston at first looked like a calamity, but its difficulties and dangers were all smoothed out by the Department of Agriculture and the Customs authorities in Boston. The former permitted us to ship the collection to the Zoological Park by rail, for quarantine, and the latter permitted it to depart without even one hour of delay on account of formalities. We are greatly indebted to Drs. Melvin and Pope at Washington, to Dr. Ryder in Boston, and to the Collector of the Port of Boston.



GREATER RED KANGAROOS

At the close of the quarantine period, the collection was equitably divided between Philadelphia, Washington and New York.

THE RUBBISH WAR.

Beginning as usual on May 1, in full vigor, the fight against vandalism in the Zoological Park was continued throughout the year. The forces and methods employed were practically the same as those of 1915.

In order to fix our Park Rules and Regulations on the firmest foundation possible, the code adopted by the Zoological Society was submitted to the Board of Parks, and on February 24, 1916, it was formally adopted by that body as a part of the Park Ordinances. Through the action of the Park Board our rules thus became in every detail a part of the City Ordinances of New York, and each section is now fully established as a municipal law.

Some question having arisen over the concurrence of the Board of Aldermen in giving Park ordinances complete legal effect, the President of the Board of Parks, Hon. Cabot Ward, formally submitted the question to the Corporation Counsel, Hon. Lamar Hardy. The opinion rendered by the City's highest legal authority, on January 18, 1917, reads as follows:

Under the express provisions of Section 610 of the Charter your Board is vested with power, subject to the ordinances of the Board of Aldermen, to establish rules and regulations for the government and protection of the public parks and of all property in its charge, and it is further declared in said section that upon the filing of a certified copy of such a rule or regulation with the City Clerk it shall become a general ordinance of the City. Under these provisions, I am of the opinion that such a rule or regulation not inconsistent with an ordinance of the Board of Aldermen, becomes an ordinance when a certified copy is filed with the City Clerk, without action thereon by the Board of Aldermen.

Naturally we have watched with keen interest the effect of our rubbish war on the disorderly element, and also upon the friends of law and order and cleanliness. Our last published manifesto of warning and exhortation elicited one pronounced criticism, of a very odd character. We stated that 90 per cent. of the people of New York are law abiding, and 10 per cent. are of disorderly, lawless and even criminal instincts. Our 10 per cent. estimate, for the lawless element, was by some commentators declared to be ridiculously below the mark. One estimated the

rubbish-throwers and the lawless at 25 per cent., and another at not less than 50 per cent. of the whole population.

We reluctantly confess our belief that 10 per cent. *was* too low an estimate for the grand army of rubbish throwers, spit-terers, thieves and assassins of New York!

Another curious feature of our campaign was the very sympathetic interest that it aroused in other cities, in the eastern area bounded by New Orleans, Chicago, Detroit and Boston. So far from being satisfied that conditions elsewhere are better than in New York, all outside newspaper comment deplored the existence of similar conditions at home. One newspaper published a considerable distance from us, declared that it is not to be lightly conceded that lawlessness in New York is any worse than it is in a certain other American city.

Judging from wide newspaper comment, it seems to be a fact that many other cities which strive to be clean and beautiful are cursed by the same devilish spirit of "personal liberty" to be dirty and make dirt that we complain of in Greater New York. It is an incontestable fact that the ridiculous excess of personal freedom and immunity from regulation that this republic has most mistakenly bestowed upon its own people, and equally so upon a vast horde of unappreciative and ungrateful low-class aliens, has now become a curse to this country. What is even worse, the evil effects of this mistake are multiplying at a frightful rate. We are sowing dragons teeth that presently may tear our vitals asunder.

One of the encouraging incidents of our campaign for cleanliness concerned a disorderly feature that by many persons once was regarded as impossible to correct. I refer to the curse of peanut shells that up to May 1, 1915, fearfully disfigured miles of walks and lawn borders in the Zoological Park. When our effort against this evil was in contemplation, there were many persons who warned us not to attempt to reform the status of the peanut. It was feared that any serious effort in that direction would arouse an amount of ridicule that would be fatal.

But the evil was intolerable, and it had to be corrected. Strange to say, in the face of rules, arrests, summonses and fines in court, the peanut shells disappeared as if by magic! During 1916, they were, in effect, totally absent! And not a word of ridicule was bestowed upon our effort.

During 1916, it was apparent that the lessons of the previous year were remembered with profit by the lawless element. The number of arrests were far below the record of the previous year; but for all that, they were still so numerous as to prove that the fight must be continuous. The Park men, the plain-clothes men of the Police Department, the uniformed policemen and the city magistrates all have their work cut out for them as long as New York remains a city, and as long as our country remains the land of "liberty"—and of lawlessness!

THE PAY OF PARK EMPLOYEES.

Every year, for the past fifteen years at least, we have labored with the Board of Estimate and Apportionment to secure for our low-salaried employees all the pay increases that there seemed to be the faintest hope of obtaining. Each year a very small number of trifling increases have been secured, but the annual total has been painfully small.

It is worthy of remark that with the sole exception of the Assistant Curator of Birds, more years than we can accurately remember have elapsed since the pay of any staff officer of the Park has been augmented.

In the preparation of our annual budget for 1917, we were informed that the Board of Estimate "would grant no increases under the head of personal service." The abolition of two positions set free enough money to increase the pay of eight employees, and we made bold to ask for other increases that seemed imperative, amounting to \$980.00.

Over that unhappy item of \$980.00 there ensued a long struggle, encompassing hearings and appeals, and finally ending in the granting of all of it save \$60.

Late in the year 1916, it was reliably reported that the Mayor, the Board of Estimate and the Board of Aldermen proposed to increase the salaries of all city employees receiving less than \$1,200 per year to the extent of 10 per cent. Without a moment's loss of time we entered an urgent claim that in that wholesale increase the employees of the Zoological Park should participate. The needs and the claims of our 151 men and women, who came within the twelve hundred dollar limit, were set forth to the Mayor, the Comptroller and others in the strongest terms.

Finally, it came to pass that the Board of Estimate and the Board of Aldermen did really increase by 10 per cent. the pay of 18,448 city employees; but our own force was penalized by being left out in the cold!

In view of the high character of our working force, its esprit de corps, its efficiency and its high standing with the public, the treatment it received on the occasion described was a stunning blow. During the past two years, the cost of living has increased from 31 to 37 per cent., and the pay of our men has, with but trifling exceptions, remained absolutely stationary. That such a force should be so treated was not only disheartening, but positively demoralizing. The situation as it stood meant for the families of scores of our men actual privations by deprivation of such prime necessities of life as food, clothing and medicine.

In this emergency, an appeal was made to the Board of Managers of the Zoological Society, for a subscription fund of \$11,600 with which to give to each Park employee, during the year 1917 only, a monthly gift or bonus in cash amounting to 10 per cent. on all salaries under \$1,300 per year. It was stipulated that if done, this action would carry no promise for any future year, for the simple reason that the Society could not be expected to repeat this effort.

The response of the Board of Managers was prompt and generous. At the annual meeting of the Board, this matter was given first consideration, as being the most important business. The sum required was subscribed by the Managers named in the following list:

Emerson McMillin (20%)	\$2,280
Edward S. Harkness	2,000
Cleveland H. Dodge	1,500
Mortimer L. Schiff (10%)	1,140
Wm. Pierson Hamilton	1,000
E. C. Converse	1,000
Andrew Carnegie	1,000
Ogden Mills	1,000
Grant B. Schley	500
	\$11,420

The first payment from this fund, for the month of January, was made on the pay-day of February 2; and never was a sys-

tematic gift toward the cost of living more gratefully and thankfully received. In addition to the direct beneficiaries, the staff officers of the Park are profoundly grateful, first because of the relief to the families of the men, and also because it saved the morale of the force from a crushing blow.

There are reasons for the hope that for the future the city will grant to our men an increase similar to that bestowed upon the fortunate 18,448 last December.

A BUILDING FOR THE HEADS AND HORNS.

The filling of all the rooms in the upper story of the Administration Building, the stairway and the lower halls with the heads and horns of the National Collection sharply accentuated the need for a building in which to house the Collection and make it accessible to the public. The Collection now contains 850 specimens, many of them of high value, and it is virtually a duty of the Society toward the public to render it accessible to the public.

On this compelling ground, the City was asked to provide a building; but for subway reasons, the City felt financially unable, at present, to provide the funds.

At this juncture the Society recalled to mind the fact that in 1899 the Society expended about \$250,000 in erecting and presenting to the City the Reptile House, the Aquatic Bird House and twenty other installations for mammals and birds. It being perfectly evident that as many as ten years might elapse ere the City would feel financially able to erect the building, it was decided to make an effort to raise a building fund by subscription.

With rare and admirable generosity, ten persons to whom the need very forcibly appealed, subscribed \$10,000 each to form a building fund. In this effort, Mrs. Frederick Ferris Thompson, for many years one of the staunchest friends of the Society, took a leading part; and her own subscription and two others secured by her were the decisive factors in the undertaking.

In view of the many humanitarian causes then being urged upon the attention of all philanthropic men and women, the urgency of our cause, as a measure of public benefit, was well attested by the subscriptions that were made. The donors of the building for the National Collection of Heads and Horns are as fol-



PLUMAGE INTENDED FOR FEATHER MILLINERY
Seized in the Sax. P.

lows; and all persons interested in the big game of the world may well remember with gratitude these names:

Mrs. Frederick Ferris Thompson,
 Mrs. Russell Sage,
 Mr. John D. Archbold,
 Mr. Jacob H. Schiff,
 Mr. George F. Baker,
 Mrs. Louise W. Carnegie,
 Mr. Andrew Carnegie,
 Mr. Edmund C. Converse,
 A Friend in Canandaigua,
 In Memory of Samuel Thorne,
 by his family.

Mr. Henry D. Whitfield was selected by the Executive Committee as the architect for the building, and work on the plans promptly began. Barring accidents and calamities, the building will be erected in the working season of 1917, the collection will be installed during the winter of 1917-18, and the building will be opened to the public on Member's Day, in the spring of 1918.

WILD LIFE PROTECTION.

As previously remarked, our tour last year through the western half of the United States revealed situations more serious and alarming than we had realized as existing. The disappearance of all killable large game west of the Mississippi River, through a wanton excess of privilege in hunting, and through ten times too many hunters for the game available, presages the early extinction of all the big game of the West outside the state and national game sanctuaries, and their environs. In those same western states, eighteen in all, the upland game birds are absolutely certain to be exterminated in a few short years unless existing conditions are immediately and radically changed by the giving of long close seasons and in every other way protecting the remnants of birds. This affects the sage grouse, western pinnated grouse, sharp-tailed grouse, Franklin, willow, and dusky grouse, ptarmigan and quail.

Inasmuch as no one else, either east or west, seemed to be taking the slightest interest in either of the above matters, it seemed to be our duty to take up both those burdens, and endeavor to bring about some sweeping reforms.

Accordingly, the big-game crisis was met by the Chamberlain-Hayden bills for the creation of about one hundred game sanctuaries in national forests. For those bills we have constantly worked ever since December 6, 1915, when they were introduced. Although favorably reported to both houses of Congress, it has thus far been an impossibility to bring either bill up for a vote; and now, for war reasons, there is no hope that either bill will be acted upon at this session. We never will cease to work for this game sanctuary measure until it finally becomes a law.

Concerning the cause of the upland game birds of the West, we have endeavored to start reform campaigns in eighteen states, simultaneously, while their legislatures are in session. Some are interested, others are indifferent, and the remainder are hopelessly apathetic. While we expect to achieve some real results, the outlook is not very promising, and it seems more than probable that ten or twenty years from now the great majority of the states west of the Mississippi River will be absolutely destitute of upland game birds.

The most of the state legislatures adjourn early in March, and results will not be known until then.

THE ANIMAL HOSPITAL.

The new Animal Hospital,—adequate, well-planned and up-to-date,—was finished in the autumn of 1916, and at once occupied. Its most notable single achievement thus far was saving the life of a valuable chimpanzee, Fanny, from pneumonia, when her death seemed certain to occur. The speedy and complete cure of the case was due to the fact that the new hospital provided means by which Dr. Blair and Keeper Engeholm were able to control the conditions surrounding the case. For example, the small sized hospital cage is easily covered with canvas, and converted into a vapor bath for the inhalation treatment.

Except for the very large animals, or those so savage and so large also that their handling in a hospital is well-nigh impossible, the hospital very sensibly diminishes the difficulties that surround the Medical Department. It is a great satisfaction to feel that henceforth Dr. Blair will have a fair show in the treatment of diseases and accidents among the Park animals.

DEPARTMENT OF MAMMALS.

W. T. Hornaday, Curator; Raymond L. Ditmars, Assistant Curator.

On November 7, the collection of mammals was materially strengthened by the addition of a valuable series of specimens from Australia. These animals were brought direct from their home country by Mr. Ellis S. Joseph, an up-to-date collector of and dealer in wild animals. Mr. Joseph made the trip from Sidney, N. S. W., stopped at Honolulu, and went thence to Victoria, British Columbia. From there he crossed the continent to New York. In all this long journey his losses were trivial, and his animals arrived in excellent condition.

The new animals necessitated some shifting and rearrangements in two buildings, and in consequence we are now exhibiting a large and fine series of kangaroos. Of these, the following were brought by Mr. Joseph: one pair each of red kangaroos, Parry's kangaroos, Island kangaroos, tree kangaroos, wallaroos, agile wallabies, black swamp wallabies and rock wallabies. Among other interesting marsupials received in the same shipment were three pairs of Tasmanian devils, one Tasmanian wolf, a pair of gray phalangers, three pairs of flying phalangers and two adult wombats. One of the latter animals is carrying in her pouch an alert and active youngster.

The shipment also included a pair of sloth bears, one Himalayan black bear and two Cape hyrax, of which the Park stood greatly in need.

The most important and spectacular purchase during the year was a female Senegal giraffe thirteen feet in height, which arrived direct from Dakar, West Africa, on the steamship *Memnon*, on August 12. This animal was brought from the steamer at Staten Island by lighter, which deposited the exceptionally high crate at the coal dock in Westchester Creek, a very bad point of departure for the Park. It was our great misfortune to lose the giraffe on December 7, of lymphatic tuberculosis, of which no symptom was visible until long after its arrival. The acquisition of this animal was first proposed, and finally made possible by American Consul, W. J. Yerby, of Dakar, Senegal, who, with rare and commendable persistence and industry, overcame a series of formidable obstacles, and finally sent the animal safely into New York harbor.

Other purchases for the year included: 2 orang-utans, 1 chimpanzee, 2 drills, 1 mandrill, 1 golden baboon, 1 black ape, 3 sea-lions, 1 leopard, 1 civet cat, 2 cacomistles, 1 badger, 2 striped-tailed dogs, 1 kit fox, 2 martens, 3 coypu rats, 1 albino porcupine, 2 South American squirrels, 1 pair black squirrels, 2 black-tailed deer and two South American opossums.

Among the more important gifts were the following: 1 siamang, 1 sphinx baboon, 4 woolly monkeys, 2 pig-tailed monkeys, 1 Canada lynx, 3 common lynx, 1 young jaguar, 1 ocelot, 1 grizzly bear cub, 2 red foxes, 1 coati-mundi, 1 black squirrel, 1 chevrotaïn and 1 Mexican deer. Acknowledgement of these gifts and names of donors appear in following pages of this report.

The American Museum of Natural History deposited at the Park two particularly interesting equines. These were specimens of the Celtic and Scandinavian horses. They arrived October 16, and have been placed on exhibition in a large yard near the Zebra House.

From the Society's research station in British Guiana, Curator Beebe has sent the following: 1 yaguarundi cat, 1 ocelot, 1 wild dog, 1 paca, 1 golden agouti, 2 rat-tailed opossums, 7 sharp-nosed opossums, 2 mouse opossums, 2 woodrats, 3 red rats and various other mammals.

Births.—The increase of our axis deer herd is particularly worthy of note. Nine perfect fawns have been added during the present year. These beautiful deer are in much demand for private collections and we have sold many specimens. We endeavor to maintain this herd at twenty head, or more. Demand from many sources, early in 1915, reduced the number to eleven individuals. There are now twenty-seven deer in the herd.

Our elk herd also has materially increased in numbers, and we are much interested in noting the development of several fawns born during the latter part of October. Whether or not these late-comers will acquire enough strength to endure the winter cold, is a problem. Normally, elk fawns are seldom born later than July, and should attain a good growth by the arrival of the cold season.

The following is a list of the most important births during 1916:

9 Axis Deer

1 Mouflon

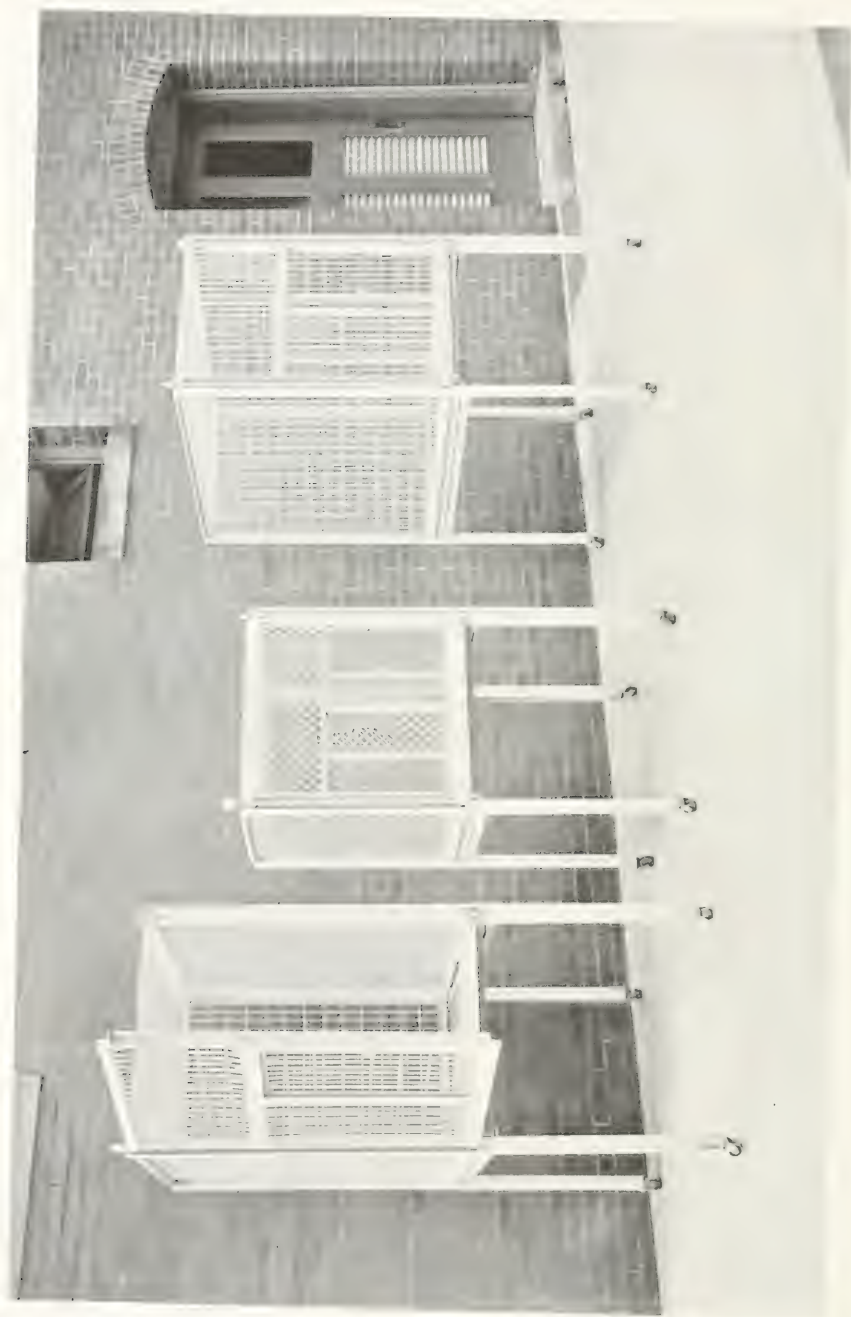
5 American Wapiti	1 Yak
7 White-Tailed Deer	2 Grizzly Bears
5 Red Deer	1 Hybrid Sloth-Russian Bear
3 Barasingha Deer	6 Raccoon Dogs
5 Fallow Deer	2 Raccoons
2 Hog Deer	7 Himalayan Tahr
2 Sika Deer	1 Persian Ibex
1 Eld's Deer	4 Red Fox
1 Mongolian Wild Horse	4 Beaver
4 American Bison	4 Aoudad

Deaths.—We have lost a number of valuable animals during the past year, but these losses were mainly from old age. In many cases it was necessary to mercifully destroy decrepit specimens. Following is a list of all important deaths during the year: Siberian tiger; Stellar sea lion; great ant-eater; American bison; Indian sambar deer; anoa; sing sing water-buck; Suleiman markhor; nylghai; sloth bear; puma; South American tapir; Malay sambar deer; Dybowsky's deer; barasingha deer; sable antelope; bontibok; American wapiti, and Senegal giraffe.

The following is a census of the Department of Mammals as compiled at the close of 1916:

	<i>Species</i>	<i>Specimens</i>
Marsupialia	15	38
Edentata	1	1
Carnivora	47	107
Pinnipedia	1	6
Rodentia	36	123
Primates	31	64
Artiodactyla (Even-toed Ungulates)	59	250
Perissodactyla (Odd-toed Ungulates)	14	23
Proboscidea	2	3
Hyracoidea	1	2
	207	617

The work of renewing the old cages in the Small-Mammal House has been two-thirds completed. The new cages are of ideal construction, and are much more satisfactory than were the cages of the original series, even when new. With them it is possible to maintain a more wholesome atmosphere than in the past. With the new construction, the floors are non-absorb-



TYPES OF PORTABLE CAGES USED IN THE NEW HOSPITAL.
The cages are made of wire mesh.

ent, all wood work and sliding partitions have been eliminated, the fronts are more open, and there is a series of cement gutters for perfect drainage. A number of new cages are already occupied by the miscellaneous small carnivores.

The following animals were sold during 1916:

6 axis deer; 1 Indian sambar deer; 5 wapiti; 3 fallow deer; 1 pair raccoon dogs, and 1 kinkajou.

The Zoological Room of the Washington Irving High School was stocked with mammals, birds and reptiles as usual throughout the school year.

REPORT OF THE VETERINARIAN OF THE ZOOLOGICAL PARK.

By W. Reid Blair, D. V. S.

The total number of deaths during the year was less than during 1915, even though our losses included a considerable number of aged antelope and deer that had been exhibited in our collections for from ten to fourteen years. In most instances these animals did not die as the result of acute disease, but were destroyed on account of general debility that had rendered them unfit for further exhibition in our collections.

Among the animals destroyed that had been on constant exhibition for twelve or more years were: two American bison, a sing-sing waterbuck, sloth bear, Indian sambar deer, barasingha deer, American wapiti, female nyllghai, and a markhor.

The new Animal Hospital is now in use. Fortunately few cases of illness have developed since it became available, so that its utility, as yet, has not been tested to the utmost. The Joseph collection of Australian animals was quarantined in the new building, as well as a part of the shipment of animals received from South Africa in charge of Mr. Loring.

The building has been available also for the isolation and observation of suspicious cases of infectious or contagious diseases, that have occurred among our collections during the winter. The prompt isolation of two cases of suspected distemper, that were detected in the early stages, checked a dreaded disease for which we are constantly on the lookout.



PORTABLE CAGE, NEW HOSPITAL
Showing the small door which slides in channel iron grooves. The cage
front swings or may be lifted out entirely.

The photographs of the new hospital will partially indicate some of the facilities that this building affords for the proper care and treatment of the medical and surgical cases which occur in our collections from time to time. If the hospital is not constantly filled with patients, it will indicate that the health of the collections in general is good.

The first patients in the new hospital were two small mountain sheep that were suffering from digestive diseases. Both animals recovered, and in due time were returned to their exhibition quarters.

Tuberculosis.—Few cases of tuberculosis have occurred in our collections during the past year, although the loss of our newly acquired giraffe was due to that disease. This animal died from acute tubercular pneumonia, but the autopsy revealed a very extensive lymphatic tuberculosis which antedated the animal's arrival at the Park in August. This case well illustrates and supports one of our contentions, that in the average case of tuberculosis, the disease has been contracted before the animal reaches the Park, either under the unfavorable conditions found in quarters of animal dealers, or under still more unhygienic surroundings prevailing in transit.

During the fall of 1915, the male Siberian tiger first showed signs of ill health, and was promptly isolated. Notwithstanding a splendid appetite, he continued to lose flesh. The first suspicion we had that this animal was tubercular, was when he began to have a harsh, moist cough. The post mortem examination showed acute pulmonary tuberculosis. This animal's cage mate, while looked upon as a suspicious case and in consequence isolated, has not, up to this date, shown any evidences of tubercular infection or any other disease.

Distemper.—There have been a number of cases of distemper among the wolves, coyotes and foxes during the year, but the prompt isolation of suspected cases limited the infection. The source of contagion was easily traced to a coyote which came from New Jersey. This animal was quarantined for observation for two weeks, at the end of which period it was placed in the Fox Dens. After an interval of ten days, a coyote in an adjoining cage developed an acute case of distemper, and later other cases developed. Still, the new arrival appeared normal in every way, and continued to appear so for a number of weeks.



OPERATING ROOM, NEW HOSPITAL

It finally showed symptoms of chorea, which is a nervous condition frequently appearing weeks after a mild attack of distemper, showing that this animal was suffering from so mild a form of distemper that when placed on exhibition, it did not betray it, and yet was capable of giving the disease to other animals.

Actinomycosis in Kangaroos.—Late in December a wallaroo, one of the animals recently received from Australia, was found to have some affection of the mouth. After the removal of the animal to the operating room at the hospital for examination, it was found to be suffering from actinomycosis of the jaw bones. Several days later another case of actinomycosis was found in one of the wallabies, that had come in the same shipment of animals. In the kangaroo, the disease runs a very acute and virulent course, and in this respect simulates the disease as observed in the prong-horned antelope. The disease is not contagious, but the animals seem to contract it readily whenever the discharges from the infected subjects are allowed to contaminate the food of the healthy ones.

Infectious Catarrhal Fever in Deer.—During the past winter an infectious malady affecting deer appeared in the Small-Deer House, and caused the death of several animals. As the disease is new to us, it is worthy of special mention.

The disease, as seen in the sambar and sika deer, is characterized by symptoms of an acute inflammation of the respiratory and digestive tracts. The contagious character of the disease is not well marked, but the infectiousness of the discharge is well evidenced by the fact that animals in close contact or in adjoining stalls readily contract it.

The deaths occurring among mammals, were divided as follows:

Primates	63
Carnivores	41
Ungulates	43
Rodents	35
Marsupials	14
Pinnipedia	2
Edentates	2
Total	200

DEPARTMENT OF BIRDS.

William Beebe, Curator; Lee S. Crandall, Assistant Curator;
Samuel Stacey, Head Keeper.

Since the writing of the report of the Department of Birds for 1915, conditions in the bird market have not improved. We feel, therefore, that we are fortunate to be able to state that since that time the collections, either in species or specimens, have not diminished. In former years, we were almost entirely dependent on importations from Europe, for the up-keep of the collections. Asiatic, African and Australasian forms reached us from that source, and far more South American species came by the roundabout way of Hamburg, than by the more direct route. The opening of hostilities in 1914 put a very effectual damper on such shipments, and the meager supply which has continued to dribble through via Rotterdam and London, has constantly diminished. The recent act prohibiting the importation of live birds into England has proved so stringent that this traffic now is practically ended.

Fortunately, however, the throttling of the live bird trade has been gradual, so that we have been able to develop new arteries of supply, as the old ones grew weaker. South America, principally through the Tropical Research Station, as well as by other means, has been successfully tapped. Australia, whose avifauna ordinarily has been obtainable only on rare occasions, can at present find a foreign market nowhere except in America. It thus happens that, while we still retain a representative collection of the birds of the world, including those of our own country, we are particularly rich in the species of South America and Australia.

From the Tropical Research Station, located in the hinterland of British Guiana, we have received a steady supply of valuable acquisitions. Besides numbers of the more usual species, the shipments included a fine adult male cock-of-the-rock, (*Rupicola rupicola*) in the full magnificence of orange plumage; a pompadour cotinga, (*Xipholena pinicea*), probably never before exhibited alive; three white-necked rails, (*Porzana albicollis*); several dusky parrots, (*Pionus fuscus*), and a lavender jay, (*Cyanocorax cayanus*).

From a professional collector, we received a pair each of the picine woodhewer, (*Dendroplex picinus*), and the white-



WHITE-NECKED CRANE
Bred in the Zoological Park.

footed oven-bird (*Furnarius agnatus*), South American species, both of which are new to aviculture.

Mr. Victor M. Cutter, of the United Fruit Co., sent us from Costa Rica, a pair of the Montezuma giant cacique, (*Gymnostinops montezumae*), a species hitherto represented in captivity only by the fine specimen brought from the same country in 1914, and which still remains in excellent condition.

Early in November, Mr. Ellis Joseph arrived from Australia with a varied collection of mammals and birds. We secured a large number of interesting species, chief among which are a New

Zealand giant petrel, (*Macronectes giganteus albus*), two kea parrots, (*Nestor notabilis*), pairs each of the Australian white ibis, (*Ibis molucca strictipennis*), the straw-necked ibis, (*Carphibis spinicollis*), Queen Alexandra parrakeet (*Spathopterus alexandrae*), and several white-winged choughs, (*Corcorax melanorhamphus*).

A very important accession, was the gift of Colonel Anthony R. Kuser, who presented 254 birds of 29 species, most of them being pheasants. Included were Cheer, (*Catreus wallichii*), brown eared, (*Crossoptilon manchuricum*), Swinhoe, (*Gennaeus swinhoei*), and Elliot pheasants, (*Callophasis ellioti*), besides three species of Kalij and a number of the more common species. It is to be noted with regret that this accession marks the dissolution of the finest collection in America.

Because of various adverse conditions, breeding results were not so satisfactory in 1916 as during the preceding year. We succeeded, however, in rearing, for the first time in this country, a white-necked crane, (*Pseudogeranus leucauchen*), a member of a group not easily bred. Most worthy of note among other birds reared this year are three picazuro pigeons, (*Columba picazuro*), a new record, about twenty mourning doves, several of which were liberated in the Park, a number of bob-white and scaled quail, two laughing gulls and a white-crested pheasant, (*Gennaeus albicristatus*), the latter probably not previously bred in America.

The Wild-Fowl Pond, which for several years past has given us much trouble because of regular outbreaks of coccidiosis during the summer months, has now been furnished with a solid bottom of concrete. The collection of water fowl is rapidly being built up and we expect now to be able to maintain it.

During the past year the Curator, in company with a party of assistants, spent six months in British Guiana, South America, establishing the Tropical Research Station, the success of which has been described elsewhere in this Report. While the chief object of this new undertaking is scientific research, yet during the summer, 154 live birds, comprising thirty-four species, of which seven were quite new to the collection, were sent to the Zoological Park.

The value of the laboratory built in the Zoological Park for the scientific work of the Department has been amply demon-

strated during the past year. It has afforded excellent facilities for the Curator and Mr. Hartley to carry on their research, since their return from the Tropical Station.

CENSUS OF BIRDS LIVING IN THE ZOOLOGICAL PARK.

January 1, 1917.

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
Rheiformes,	Rheas	1	1
Struthioniformes,	Ostriches	2	4
Casuariiformes,	Cassowaries and Emus	3	8
Tinamiformes,	Tinamous	2	2
Galliformes,	Quail and Pheasants	64	337
Turniciformes,	Hemipodes	1	1
Pteroclidiformes,	Sand Grouse	1	1
Columbiformes,	Pigeons and Doves	45	175
Ralliformes,	Coots and Gallinules	10	16
Sphenisciformes,	Penguins	1	3
Lariformes,	Gulls and Terns	12	39
Charadriiformes,	Plovers and Sandpipers	8	14
Gruiformes,	Cranes, Seriemas, etc.	9	24
Ardeiformes,	Ibises, Storks and		
	Hérons	26	66
Palamedeiformes,	Screamers	2	3
Phoenicopteriformes,	Flamingoes	2	3
Anseriformes,	Swans, Geese and Ducks	67	637
Pelecaniformes,	Cormorants and Pelicans	8	20
Cathartidiformes,	New World Vultures	7	17
Accipitriformes,	Hawks and Eagles; Old		
	World Vultures	17	32
Strigiformes,	Owls	12	22
Psittaciformes,	Parrots, Macaws and		
	Cockatoos	58	145
Coraciiformes,	Kingfishers, Hornbills,		
	etc.	2	8
Cuculiformes,	Touracos and Cuckoos	3	8
Scansoriiformes,	Barbets and Toucans	9	12
Piciformes,	Woodpeckers	5	17
Passeriformes,	Thrushes, Sparrows and		
	other Perching Birds	439	1173
		816	2788

Summary: Orders, 27; Species, 816; Specimens, 2,788.



CARPET PYTHON

DEPARTMENT OF REPTILES.

Raymond L. Ditmars, Curator; Charles E. Snyder, Head Keeper.

An important event, of the past year, in this department, was the Curator's collecting trip, which very fully filled the gaps in the collections of the Reptile House. We had experienced much difficulty in maintaining the collections at a high standard, owing to war conditions and the consequent lack of Old World specimens.

The expedition to South Carolina for reptiles resulted in the capture of over 560 specimens, representing over 40 species, as follows: Crocodilia, 1 species; turtles and tortoises, 7 species; lizards, 7 species; serpents, 19 species; amphibians, 9 species.

The collection of snakes was particularly noteworthy. Deducting the weight of the crates shipped north, the weight in captive serpents was over a quarter of a ton—530 pounds. Fine examples of the cane-brake rattlesnake and many huge specimens of the "cotton-mouth" snake, or moccasin, were collected. There was a very complete series of the several species and subspecies of the brightly colored, non-venomous water snakes—some of very large size.

One large alligator and a number of small ones were shipped to the Park. The time consumed in this trip was from April 23, to May 10. The Curator and his assistant, Keeper George Palmer, of the Reptile House Staff, worked through various kinds of sub-tropical country, embracing large areas of cypress swamp, hammocks, savannahs and pine woods, all in Jasper County, South Carolina. The Zoological Society *Bulletin* has already published several articles from observations made during the trip.

After fifteen years of caring for snakes of various types, and always with a large and representative series of the poisonous species, the first accident from a venomous serpent occurred in the Reptile House on the morning of January 27, of the past year. While cleaning one of the easterly cages, Keeper John Toomey was bitten on the right thumb by a large and particularly savage Texas diamond-back rattlesnake.

Our men are well versed in first-aid treatment for snake-bite, and Senior Keeper Snyder at once sucked the wounds. A ligature was immediately applied and the Society's physician, Dr. Gilbert Van der Smitten, quickly arrived and injected Dr.

Calmette's anti-venomous serum. We were fortunate soon after in obtaining tubes of the specific rattlesnake serum, produced by Dr. Vital Brazil, at the Instituto Serum-Therapico, in Sao Paulo, Brazil. Keeper Toomey was removed to the German Hospital, where under the skillful treatment of Doctors Semken and Van der Smissen he entirely recovered. He has now completely regained the use of his hand. A detailed account of the treatment in this case appears in the May number of the Society's *Bulletin*.

During the year the department suffered a number of minor losses from an epidemic of parasites that attacked the smaller snakes, causing fatal skin eruptions. Much cleansing, fumigating and disinfecting were necessary in eliminating the pests. A serious loss occurred during the past December, in the death of one of the two large pythons that had been occupying the largest central cage for a period of ten years. By special request, the body of this fine specimen was presented to the Buffalo Society of Natural Sciences, for exhibition in their Museum at Lafayette Square, Buffalo, New York.

The department has contributed much material during the year to the American Museum of Natural History. Living material was sent to the Museum for study and final casting for a Florida habitat group. All of this material came from our southern collecting trip.

The year's scientific and general work of the department, aside from the care of the collections, embraced the preparation of various articles in the *Bulletin*, lectures to school children, both at public schools and in the Park, and motion picture preparation and exhibition before the Children's Auxiliary of the New York Zoological Society, and other occasions. Parts of the Society's forthcoming book on the care of captive animals were brought up to date, and much work was done in tabulating and perfecting the system of card indexes relating to the longevity and disposition of specimens.

During March, the series of panoramic backgrounds in the large snake cages was completed. This work was done by Mr. E. A. Costain, in charge of the Park nurseries.

The most important accession was the series of reptiles collected in South Carolina. The year's purchases included but few costly specimens. The more important were as follows: 48 tor-

toises; 2 Australian monitors; 5 Turk Islands iguanas; 6 Surinam amievas; 1 small African crocodile; a series of Australian poisonous snakes, including 5 purple death adders; 2 brown snakes; 3 tiger snakes, and 7 carpet snakes; 1 South American bushmaster; 1 green boomslange, (South Africa); 5 brown boomslange; 1 Cape cobra; 29 puff adders, and 30 mole snakes. All the South African specimens were brought to America by Mr. J. Alden Loring.

Among the more important gifts received during 1916 were the following: A series of the representative poisonous snakes of Brazil, presented by Dr. Vital Brazil, Director of the Instituto Serum-Therapico, at Sao Paulo; a collection of timber rattlesnakes, copperhead snakes, also non-venomous snakes, presented by A. L. Gillam and E. L. Bell; and a collection of Florida reptiles, presented by Messrs. Gillam and Bell.

From Kalacoon, the Society's Zoological Station in South America, in charge of Curator Beebe, the department received a series of turtles, lizards, snakes and amphibians.

The following is a census of the collection of reptiles and amphibians compiled on December 31, 1916:

	<i>Species</i>	<i>Specimens</i>
Crocodylia	5	69
Chelonia	29	158
Lacertilia	20	55
Ophidia	49	266
Amphibians	35	234
Total	138	782

SUMMARY OF COLLECTIONS.

A census of the animals in the Zoological Park, taken January 1, 1917, is as follows:

	<i>Species</i>	<i>Specimens</i>
Mammals	207	617
Birds	816	2,788
Reptiles and Amphibians	98	782
Total	1,121	4,187



DEMONSTRATION OF AN ELEPHANT'S STRENGTH

By standing on the lowest rail of the fence, the elephant was able to place his head under the top rail and bend it as shown in the picture.

GROUND IMPROVEMENT AND MAINTENANCE WORK OF THE
DEPARTMENT OF FORESTRY AND CONSTRUCTION.

Hermann W. Merkel, Chief Constructor and Forester;
E. H. Costain, Assistant Forester;

Paving Wild-Fowl Pond.—The first work undertaken through the Ground Improvement Fund, was the completion of the grading and paving of the bottom of the Wild-Fowl Pond. After excavating over 200 cubic yards of soft black mud which necessitated much laborious and costly hand work, the bottom of this pond was bedded with 1,000 cubic yards of earth fill and stone, in order to provide a firm and even foundation upon which to lay concrete. Nearly 450 cubic yards of reinforced concrete were then laid upon this bed. Owing to adverse conditions encountered on this work, and the failure of the City to provide the entire amount asked, the sum of \$750 was expended from the Improvement and Repair Fund, making the total cost of this work, \$3,750. Even this sum did not permit us to pave the entire pond, but the bottom is now cleanable. The water can be drained off, annually, and the bottom will be thoroughly scrubbed. By this means further epidemics among the wild-fowl will be avoided.

Paving Around New Hospital Building.—Around the new Hospital Building, there have been laid approximately, 3,000 cubic feet of concrete in the form of pavement and retaining walls, and 1,644 square feet of tar-macadam. Of course, all paving has been laid upon a Telford foundation. This makes it possible to keep the surroundings of the Hospital Building perfectly clean and sanitary.

In the building itself, the floors of several of the interior cages were re-surfaced in order to provide the proper drainage.

Some difficulty was experienced with the steam-heating contractor, but after a long delay the building is now in first class condition.

IMPROVEMENT AND REPAIR FUND.

(Taken out of the fund for the purchase of animals.)

Repairs, Walks and Roads.—As in past years, walk repairing was the largest item drawn from this fund. Over 45,000 square feet of walks and roads were re-surfaced. The favored

areas being a section of the Service Road, the plaza at Boston Road Entrance, the West Farms Block, the Pheasant Aviary Walk, a portion of Baird Court, and the Service Yards.

At the Boat House, where the approach never had been put in really good condition, and had become unsightly by the fact that the railings bordering the roadways were battered and broken by teams and automobiles, a long front of strong concrete coping was built. It is constructed on the same lines as that surrounding the plot between Boston Road, 180th Street, and the Bronx River. It is about 300 feet long, and contains two pedestals upon which cast-iron lamp posts have been set. It gives the Boat House a finished look, and thoroughly protects the lawn and plantings from any further damage by vehicles. The expenditures for this coping and for the walk repairs amounted to \$2,039.97.

Tree Pruning.—Owing to the urgent demand for work in the pruning of dead limbs, and the cleaning and treatment of cavities, it was necessary to increase our small force of tree pruners by several additional men. Efforts in this line were concentrated upon certain sections of the Park, where they were most needed, and these sections, as for instance, Bird Valley, the portions adjacent to the Jungle Walk and Beaver Valley, were greatly improved. The cost of this to the Improvement and Repair Fund was \$650.

Small Mammal House Repairs.—The condition of the interior cages on the west side of this building had become so bad that it was necessary to remove and rebuild the entire series, on improved plans. After the general requirements for these cages had been obtained from the Mammal Department, Mr. De Wellworth, in charge of the ironworkers, made detailed plans for this work, under the direction of Mr. Merkel.

The new plans did away with all woodwork, substituting therefor floors of concrete and Tileine and roofs of glass and steel. All cage partitions and ends were supplied with sanitary bases, and were carefully waterproofed. All pockets or recesses in which dirt might accumulate were eliminated. The iron framework was simplified, and the design of the wirework so changed that all surfaces are accessible for cleaning and painting. Reinforced concrete gutters were substituted for the unsightly and unsanitary lead-lined iron gutters. The many demands of the great variety of animals of various sizes and habits

and degrees of destructiveness were carefully considered, and met as far as possible. The tops of the cages were sloped to facilitate cleaning, and built of sheet iron and heavy corrugated glass, making the entire upper tier much lighter than before.

Each cage was supplied with a triangular sleeping box that can be removed for cleaning purposes, and while these of necessity were made of wood, they were reinforced on all exposed edges and corners by heavy strips of sheet metal, to prevent their destruction by the teeth and claws of the animals.

These rebuilt cages, fifty-eight in number, are a vast improvement in appearance and comfort, as well as from a sanitary point of view. With proper care, they should last as long as the building itself. It is expected that early in 1917, work will be commenced on the eighteen larger cages on the east side, so as to finish them before the busy season commences. The cost of the work in the Mammal House during 1916 was \$1,880.32.

Elephant House Wire-Guards.—To prevent visitors from throwing food, etc., into the stalls, and also to prevent possible injuries to visitors by the animals, a high guard of wire netting was erected above the railing in front of the stalls of the rhinoceros and the African elephants. The cost of the work was \$100.

West Roof, Reptile House.—The western section of the roof of the Reptile House developed leaks and became somewhat dangerous on account of dry rot in the wooden rafters. This was due in part to faulty construction, and in part to the excessive amount of moisture from the evaporation of the water in the Conservatory and the Alligator Pool. The very large metal skylight, and the decayed rafters, roofing, and interior sheathing were removed and rebuilt in a better manner, and the slate laid upon a foundation of heavy bituminous paper. Snow guards were also installed in order to prevent the breaking of the glass of the Conservatory by the avalanches of heavy snow and ice, which have sometimes occurred after extra heavy snowfalls in previous winters.

Concrete Piers and Floor for Large Shelter Pavilion.—The large Shelter Pavilion near the Wolf and Fox Dens had been thrown out of line by the forces of the elements, and owing to the decay of the post bases and heavy floor sills had become dangerous. To make the foundation floor of this building more

permanent in character, all of the outer bearing sills were removed, and solid concrete foundations were substituted. The piers were raised above the floor level to prevent the further decay of the posts that support the roof. In the fall, when the building was free from visitors, all of the flooring, floor beams and heavy interior sills were removed, and the soda fountain and other equipment located in the south end of the building were taken down and stored. Under this end of the building, the earth and rock were excavated to allow for a basement for gas, water and sewer pipes. During the winter the foundation was filled in with ashes to support the new concrete floor. Early in the spring the new floor will be laid, and it is expected to have this building ready for occupancy early in the summer. The cost of this improvement during 1916 was \$568.44, and it is expected that the remaining balance will be sufficient to finish the work.

Concrete Benches.—During the cold months at the beginning of 1916, thirty-four concrete benches were made. Nearly all of these were used on the new Boat House platform. As many of the older series of iron and wood benches have been broken up, and as many more are rapidly becoming useless, it will be necessary to make about fifty concrete benches every year in order to supply sufficient seating capacity.

East Side Improvements.—On account of the changes in the state of labor market, the arrangement made with the N. Y. Association for Improving the Condition of the Poor did not work out as well as was expected. Instead of obtaining from them the usual number of unemployed men that have come to us during the previous year, the men sent to us chiefly were convalescents, and unable to do the hard, laborious work necessary in the making of permanent improvements. These men were employed in the nursery, in lawn-mowing, raking, cutting brush, and in general cleaning. In thus distributing this labor, we were enabled to maintain the portion of the Park east of the Boston Road in a more perfect state than ever before.

Guard Wires.—As in former years, the many miles of wire guards and railings required a large amount of repair and replacement work; and this was paid for out of the Improvement and Repair Fund.

Musk-Ox Fences.—The condition of the fences at the Musk-Ox Corrals, and the increasing strength and destructiveness of

the musk-ox bulls made it necessary to rebuild three of the partitions and a portion of the front. These fences were made in accordance with our heavy partition fence design, with three-inch tee posts and three-inch heavy horizontal tee bars, surmounted by the ordinary wire fence. A heavy concrete retaining wall and coping was built along the westerly side of these corrals, and new gates of extra strong construction were furnished.

Pipe Line to the Boat House.—A new three-inch lead water-main was installed at the Boat House, to take the place of the iron main that was very much corroded and liable to fail at any time. This necessitated extensive excavation work across the Boston Road pavement, the sidewalk, and the main Park walk west of the Boat House.

New Garage.—In order to provide a long-needed storage place for automobiles, a very simple garage was built in the second portion of the Service Yard, just north of the Workshop building. Unfortunately, the funds that were available did not permit the erection of a building sufficiently large to take care of future developments in the Park's motor service. The building that was erected has proven to be a great relief from very bad conditions. The garage is 21' 4" x 58' in size, of brick and concrete construction, and conforms with the rigid demands of the Fire and Building Departments.

Storage Shed.—Utterly insufficient storage facilities compelled the erection of a brick storage shed 26' 6" x 75' 7½" in size, north of and parallel with the Workshop building. In construction this is similar to the Garage that adjoins that building on the east. Only the concrete foundations were put up before the ending of the year, but with fairly good weather the building should be completed by April 1, 1917. Through this effort, dry storage for lumber, steel, iron, cement, plaster, paints and oils will be provided.

MAINTENANCE WORK.

The usual work in the general maintenance of buildings and other Park installations, and in the care of lawns, gardens, trees and shrubs, walks and roads, was carried on as usual throughout the year; at times taxing the resources of this De-



IMPROVING WILD-FOWL POND
A sea of thin mud was left after the water was drained off.



IMPROVING WILD-FOWL POND
The liquid mud and refuse were dug out and carted away. The bottom was then paved.

partment to its utmost, as for instance during the heavy snow-falls that occurred last winter.

Of special importance may be mentioned the connecting of our two largest water-mains with the high pressure main on Southern Boulevard. This was demanded by a change made by the Water Department, which at once produced extremely low pressure in the large main from which we were taking the water. For some time this not only caused an actual water famine throughout the Park, but compelled us to close some of the comfort stations.

Another important task performed by our plumbing force was the replacement of all of the water pipes in the Primate House.

The most important tasks of the iron workers were, the replacement of the netting of the Lion House cages, repairs to the outside Primate House cages, to the Buffalo, Asiatic Deer, Elk, and Hangul Deer fences, and a great deal of work around the Small Deer and Antelope House yards.

A hot-water supply system was installed at the Service Building.

Owing to the breakdown of the old boiler at the Small Mammal House, a new boiler of the improved type produced in recent years was set up and connected with the system. This work was carried on day and night until completed.

A number of ozonators were placed in various animal buildings with excellent results.

Extensive carpenter work was done at the Boat House dock in setting forms for concrete, rebuilding the flight of steps from the Boat House to the landing, and the setting of concrete benches.

At the Nursery, plant benches were installed in the old greenhouse, nearly doubling our capacity for raising bedding plants.

During the year, the policing of the Park was unusually efficient. With the help of a force of detectives and extra men furnished by Captain Ivers of the 68th Precinct, the Park has been kept in a very orderly and clean condition. The summons system

and a Special Court day for violations of park ordinances, has worked out exceedingly well. The number of arrests and convictions by our own force of special officers was about one hundred twenty-five.

Among the items of work that must be done in the near future, one of the most important is the overhauling of the Lion House comfort station. The fixtures here are in a deplorable condition, and should be replaced with improved and more sanitary ones. A great number of complaints have been received about this station. The railing between the Boston Road and the Buffalo Range must be replaced with a new one of much stronger design. New planting is necessary at the rear of the Service Yard, where the new Storage Shed and Garage now stand, as well as between the Hospital and the Elephant House Walk. The planting in the Italian Garden and portions of the Concourse should be very thoroughly overhauled.

The storage house for bay trees and similar plants must be enlarged by at least fifty per cent., as these plants have suffered from overcrowding during the last few years.

DEPARTMENT OF ADMINISTRATION.

H. R. Mitchell, Chief Clerk and Manager of Privileges; Wm. Mitchell, Cashier.

Since the opening of the Zoological Park to the public in 1899, there never has been a period in its history of such constant and extreme advance of prices of practically all food and other supplies required in the maintenance of the Park, equal to that of 1916. If we add to this situation the fact that the appropriation for the year was reduced by about \$3,000 from the allowance for 1915, any one can readily appreciate the difficulty of getting through the year without a deficit.

The Curator of Birds, Mr. Beebe, was detailed in research work at the Zoological Society's Tropical Research Station for the year, and Mr. Merkel, our Chief Constructor, was temporarily put on part time work for the last half of the year, which effected a considerable saving in the salary account.

Our appropriation from the City, fortunately, was given to us again in a lump sum, which enabled us to utilize any saving that we were able to make in the salary account, for the

purchase of supplies. Without this provision, a deficit could not have been avoided.

Audit of Accounts.—The usual audit of accounts was extended to include the petty cash accounts of the Director and the Secretary.

Arrangements were made by which the auditors carried on their work at convenient periods throughout the year, both in the privilege account and the Society's funds, permitting the completion of the audit very promptly after the first of the year. The Audit Company's certificate appears elsewhere in the ANNUAL REPORT, in connection with the Treasurer's statements. New accounts were created during the year for the Gallery of Oil Paintings, Publication fund and Heads and Horns building fund.

For convenience in bookkeeping, authorization was granted for the carrying of a number of funds in one column in the cash book, under the heading, Special Funds, and a number of trust funds in a column headed, Special Trust Funds.

The changes made on the first of January, 1916, in the methods of approval and payment of bills have proved very satisfactory.

Privileges.—We are sorry to have to report a rather unsatisfactory year in privileges in point of profits. While the result was due to some extent to general business conditions prevailing throughout the year, it was largely due to reduced attendance in the best months of the season from the following causes: Unfavorable weather in May and June, infantile paralysis in July and August, and trolley strikes in August and September. From July 1, to the end of the season, the attendance of children was almost entirely cut off because of the paralysis epidemic.

There was a total net decrease in Privilege Department receipts for the year of 4½ per cent. as compared with a decreased attendance of 7½ per cent., showing that the gross receipts did not suffer from adverse conditions as greatly as the attendance.

Although the greatest possible economy was practiced in fixed charges and operating costs, it was impossible to overcome the conditions referred to above.

Net profits in all privilege accounts increased 5 per cent.



The slip for loading the launches has been built by the Boat House Launch Slip.

over 1915 in the face of a $4\frac{1}{2}$ per cent. decrease in gross receipts, denoting rigid economy in operation, as further evidenced in a decrease of 12 per cent. in Salaries account in 1916, following a reduction of 11 per cent. in the same account in the previous year.

Rocking Stone Restaurant.—The falling off in gross receipts was not out of proportion to the reduction in attendance for the year. The exact figures were 5 per cent. for the receipts, and $7\frac{1}{2}$ per cent. for the attendance. But for the unusually high prices of supplies, a more satisfactory showing would have been made. As it was, all that we were able to do was to make a slight gain, and maintain the standard of service.

Boating.—Late in the year 1915, the work of tearing away the old wooden dock at the Boat House was commenced, and the site filled in with stone from a near-by apartment house excavation, delivered and dumped without cost to us. It was our plan to have the wall forming the face of the dock built before winter so that the concrete surface and finish could be put on after the frost had disappeared in the spring, and before the boating season opened.

This could not be done, however, as the contractor who was to build the wall failed to carry out his contract at the time the work should have been done, and high water followed, preventing the completion of the work before winter. No further progress could be made until spring, and then high water again delayed the work until it seriously interfered with the boating season, and reduced considerably the early receipts. Fortunately, the boating season was fully thirty days later than usual, which helped the situation to some extent. For several weeks boating operations were carried on as efficiently as they could be by utilizing one end of the dock that had been completed. The work of concreting the entire surface of the dock was finished in June.

The wisdom of this improvement, as well as the reduction in boating rates from 35 and 50 cents to 25 and 35 cents per hour, respectively, was immediately demonstrated by an increase in the business. The four months, July to October inclusive, covering the period in which full use could be made of the new dock, showed the following increases in gross boating receipts over the same months in 1915: July, 37 per cent.; August, 134 per cent.; September, 131 per cent., and October, 110 per cent.

The completed dock is a most substantial and satisfactory improvement; of the kind that all permanent improvements should be. The slip or inlet provided for the launches is a great success, adding a large amount of dock room for the handling of row boats, which was very badly needed.

The further improvements required at the dock in the near future are, the replacing of the old, narrow plank extension on the north end with concrete, and the erection of a suitable canopy or awning, for shade, over the central portion of the dock.

Boat House Restaurant.—While the gross receipts for the year at the Boat House Restaurant increased somewhat over last year, it was impossible to make an improved showing in the net results. All restaurant supplies advanced materially during the year. Although our prices for food are very much below those charged elsewhere for a similar class of service, it seemed best to maintain our prices unchanged throughout the year. If prices for supplies continue to advance, changes will have to be made in the menu.

Soda Water.—This branch of the privileges was more seriously affected than any other by the unfavorable conditions that prevailed throughout the entire season, particularly through the absence of visitors in the months of July and August. The gross receipts showed a reduction for the season of 16½ per cent. While the unsatisfactory showing in this division can be, in a great measure, accounted for by the conditions referred to previously, it is also a fact, that many improvements have been made in soda fountain equipment during the last five years. Nevertheless, it is true that all of our fountains now are nearly ten years old and they have become almost obsolete because of the recent improvements that have been made by manufacturers in construction and in designs. To-day our equipment is not up to the standard that will be found in the ordinary confectionery store. It gradually must be replaced and brought up to a standard equal to the best to be found elsewhere.

Refreshment service in public parks, to be successful, must now conform in all respects to the best standards. With this fact in mind, we have been making an unsuccessful effort for several years to secure an appropriation for the construction of a new concrete building for refreshment purposes to replace the present rapidly decaying wooden shelter near the Reptile House.

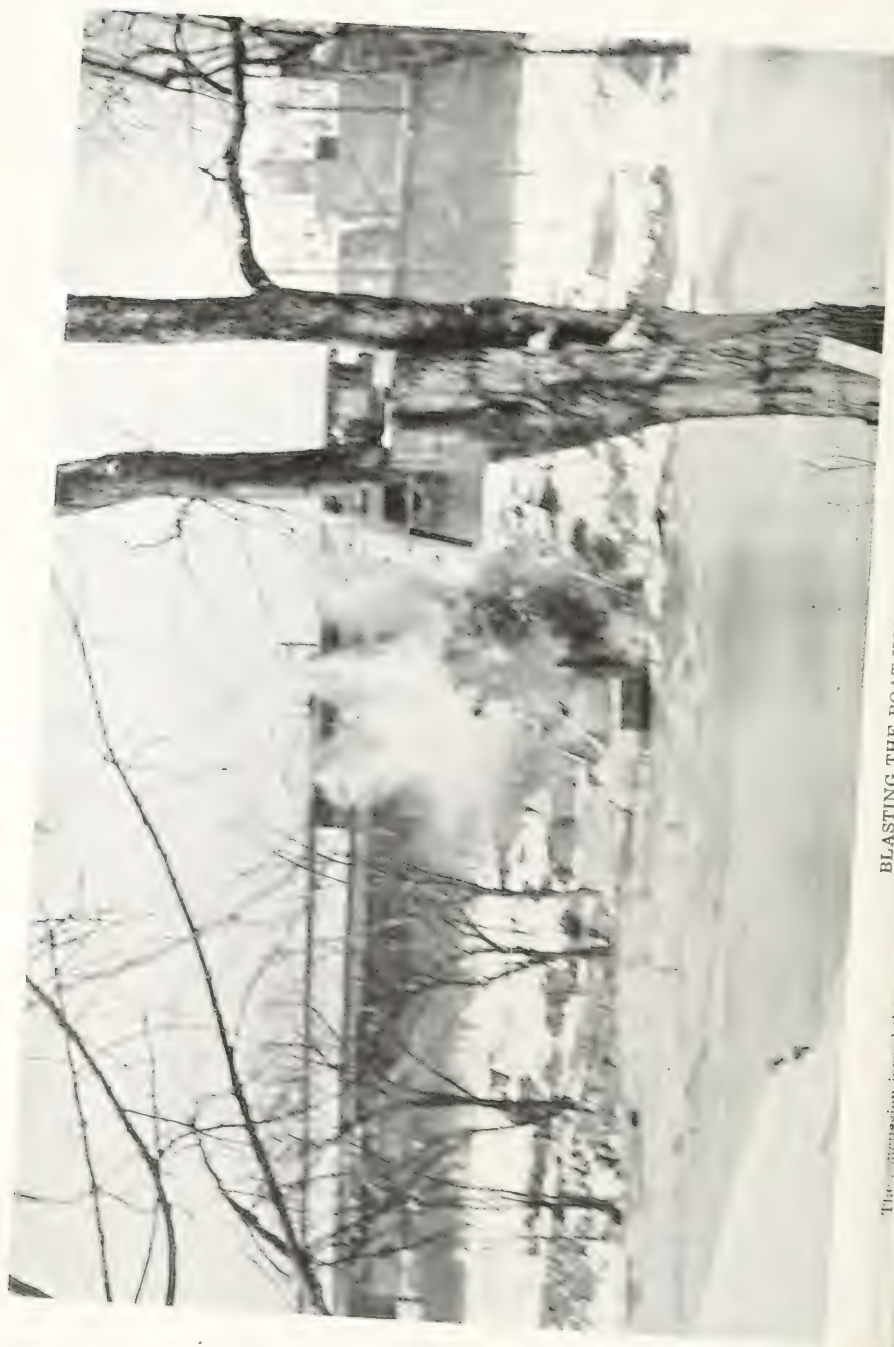
This improvement is a necessity that must be provided in the very near future. No one can give the service that should be given at this location without new equipment.

Guide Book.—Although the attendance for the year 1916 fell considerably behind that of 1915, it was rather surprising to find that there was a slight gain in guide book sales. The "Gorilla Edition," of 20,000 copies, printed in September, 1915, was so far reduced that the stock cannot run through 1917, and arrangements have been made for a new edition, to be ready about the first of next June. There will be a material advance in the cost, and a consequent reduction in profits on the new issue, because of the very great advance in the price of paper. To protect ourselves against further advances before going to press, the paper stock already has been purchased.

Souvenir Books, Postal Cards, and Miscellaneous Publications.—The most successful article in this group of privileges is the series of "Animals in Art Stamps," which were first published in 1915. Before the end of the year, it was found that the original edition was getting low. A demand for these stamps and the albums had developed outside the Park, and arrangements were made for a new printing from the same plates. Delivery was made late in the year, and they are now being folded and put into envelopes.

The stock of souvenir postal cards was almost exhausted by the end of the summer season, and plans have been made for a new issue, to be ready in the spring. It is proposed to add a number of new subjects and discard an equal number of the least attractive of the old plates. On account of the paper market, an order for the stock was placed as soon as the new issue was decided upon.

The only new feature attempted during the year in the nature of a publication to be sold in the Park, was the "Wild Animal Stamp Primer," a 96-page, cloth-bound book of animal stories for children, illustrated by 50 colored stamp pictures of animals made from photographs taken in the park. The illustrations are in the form of stamps which the child is required to paste in the spaces provided in connection with the stories. On account of an unavoidable delay, the book was delivered rather late in the season, otherwise the entire edition would have been sold, as it proved to be very popular with children.



The explosion jarred the coast.

BLASTING THE BOAT HOUSE DAM.

Gate Receipts.—All the receipts at the entrances on pay days were again used in meeting the cost of improvement and repair work that could not be financed from the funds provided for maintenance. As the collections were somewhat less than our estimate for the year, a part of the work that was planned had to be deferred.

Riding Animals.—As this division of the privilege depends entirely on the attendance of children, it was, of course, greatly affected by the new conditions, and the gross receipts fell below the normal of other years. We continued the use of the riding elephant, Alice, with very satisfactory results. More than 5,000 persons were given rides, without the slightest accident of any kind.

DEPARTMENT OF ENGINEERING.

George M. Beerbower, Civil Engineer.

The most important piece of work accomplished in this department during the year 1916 was the construction of the new wharf at the Boat House.

The original wharf, of wood supported on piles, was built ten years ago. Being immediately over the water, it decayed very rapidly. It had been patched with boards and sheets of iron until it was most dangerous and unsightly, and finally the beams decayed to such an extent that it had gone down in places, and could not be used.

The first part of the work to be done was the removal of this old decayed wharf, consisting of 72,000 square feet of lumber. This was torn up and floated down the river to a convenient landing place, piled, dried and burned.

The next operation was that of filling the site, for which 2,000 cubic yards of earth were required, as well as 150 cubic yards of stone for the sea-wall. All of these materials were obtained and delivered on the site without cost.

It was necessary to lower the water in the river, and as the sluice-way in the dam was not large enough to carry off the spring flow of water, it became necessary to blast away a portion of the dam. A photograph of this blast is reproduced



THE BOAT HOUSE LANDING

The upper picture shows the condition of the platform as it existed;
the lower picture, the completed work.

herewith. Even though the blast was covered by large logs chained together, and these in turn covered with a mat made of large ropes, water and stones were thrown to a height far above the elevated railroad structure.

The soft mud was then removed, in some places, to a depth of six feet, to the clay bottom, to provide suitable foundations for the sea-wall. The sea-wall was built of large stones without mortar to within one foot of the water-level, and the remainder was built of rubble masonry. The wall, in plan, is a compound reversed curve, to conform to the old water line at the edge of the dock.

A slip was built within the wharf area to admit the launches, whereby they may discharge passengers on one side and receive them on the other, and thus greatly expedite the handling of the launch traffic.

Drains from the Boat House were laid, the fill leveled off, and a floor of six inches of concrete was laid over the entire wharf area. A platform was constructed two steps above this level along the rear edge, and concrete benches placed there for the accommodation of the public.

A row of electric-light posts was erected, each post having a cross arm carrying a large light at each end, and a socket in the center for a flagstaff.

An enclosure was made at one side of the launch slip and provided with a canopy and concrete benches for the reception of a sufficient number of persons to load a launch. This serves to prevent confusion, and the struggling of crowds to get on the launches during rush hours.

Formerly the water had been too deep in some places along the wharf, and in other places the river bottom was composed of sticky mud. These constituted most dangerous conditions for persons entering and leaving the rowboats. Accordingly, the mud was removed and fill put in, making shallow water and a solid bottom for a distance of forty feet from the wharf.

We now have a most attractive and satisfactory boating pavilion which will be good for all time, and require few repairs.

Numerous surveys were made and maps drawn with refer-

ence to the exchange with the Public Service Commission of small parcels of land on the easterly boundary line. Also maps and plans were prepared, showing proposed added areas to the Zoological Park on the easterly side.

Maps and plans were prepared to be used in the hearings on the City zoning plans.

Lines and grades were staked out for the paving of the Wild Fowl Pond, and

Plans were prepared and filed for a Garage and a Material Storage House, and

The Garage was built, and the foundations were completed for the Storehouse, under the direction of Mr. Beerbower.

Numerous surveys were made and plotted for the proposed Heads and Horns Museum.

The various record maps of the Park have been brought up to date, embodying all the work done during the past year.

DEPARTMENT OF PHOTOGRAPHY AND PUBLICATION.

Elwin R. Sanborn, Editor and Photographer; Anna Newman, Assistant.

Photography.—The most important subjects photographed during 1916 were the following: siamang, Celtic horse, Scandinavian horse, Pekin sika deer, axis deer, Nubian giraffe, wombat and young, wallaroo, Parry kangaroo, brush-tailed wallaby, island kangaroo, agile wallaby, cock-of-the-rock, white-necked crane, hooded vulture, northern tiger bittern, mussurana, jararaca, lancehead viper, carpet python, regal python, South American rattlesnake. And the progress of Construction work at the Wild Fowl Pond.

A series of views were made of the Animal Hospital, exterior and interior, details of cage work, operating room and operations. A series of pictures was made to show serums for snake bite, fangs and crystalized venom and the process of treating a snake-bitten patient.

Photographs were made of the new concrete pier at the Boat House, a cat trap, a sparrow trap, panels of bird plumage, Heads and Horns tablet, arrival of a giraffe; and various negatives

of buildings along the Southern Boulevard were made for the Park engineer, Mr. Beerbower.

The complete elimination of certain coal-tar derivatives brought from Germany has caused a great advance in the prices of the essential photographic chemicals. Figures compiled by the *Motion Picture World*, the organ of the motion picture producers, are almost beyond belief. Metol, one of the most necessary chemicals used in developers for the production of negatives leaped from \$4.50 per pound to \$75.00 and \$100.00; hydroquinone from 90 cents to \$9.00 per pound; oxalic acid from 10 cents to \$5.00. Some of the potashes have advanced 300 per cent., and aniline dyes 500 per cent.

Printing papers have increased from 15 to 20 per cent.; and dry plates, because of the scarcity of Belgian glass, which is used almost exclusively, have advanced 25 per cent.

American manufacturers are now producing, in limited quantities, substitutes for many of the German products. The radical changes that have become necessary in the manufacture of photographic products have produced correspondingly bad effects, and salesmen of one of the large manufactures stated that in all the years of their business career there were never so many difficulties with plates and paper as have been apparent in the last two years. It is to be expected, however, that within a few months all these difficulties will be smoothed away, and the production of photographic supplies will firmly settle down upon an all-American basis.

Bulletin.—Six numbers of the Zoological Society *Bulletin* were issued in 1916. Several numbers contained very valuable and interesting material, furnished by Mr. Beebe from the Tropical Research Station, and Mr. Ditmars from his expedition to the low-lands of the Savannah River. Continued progress in the development of photography of the exhibition tanks at the Aquarium have furnished the Director with interesting numbers for that department of the Society's work. The rapid increase in the prices of printing papers forced the Society to secure a stock of paper for the *Bulletin* sufficient to last until 1918.

Annual Report.—The ANNUAL REPORT for 1915 was issued in its regular form, and at the usual time.

Zoologica.—Numbers 3 and 4 of Volume II. were devoted



RAINBOW TROUT

to scientific research at the Tropical Station in British Guiana by Mr. Beebe, and were illustrated by Mr. Paul G. Howes. Number 5, contributed by Prof. E. W. Gudger, was an interesting paper on the Gaff-Topsail Catfish.

Zoopathologica.—Because of the wealth of material in the Society's possession on the diseases of animals, a new publication was created to better place this matter at the disposal of scientific men interested in this branch of our work. Dr. George A. MacCallum contributed the first paper, "Parasitic Trematodes of Marine Fishes." Other papers are in course of preparation.

Annual Meeting.—A series of motion pictures, showing the development of antlers of the Wapiti, the work of the beaver, the life of a gray squirrel, the temperament of a savage zebra, and pictures of emeu, Alaskan bears, sea-lions, gorilla, and various other mammals taken in the Park by the Department, were exhibited at the Annual Meeting of the Society.

Appended is a statement of the photographic work in 1916:

Lantern slides sold	69
Enlargements sold	8
Prints for Albums (Aquarium)	43
Prints for Albums (Park)	210
Prints for Publication	502
Prints sold and used for miscellaneous purposes	642
Prints for Files	600
Total	2,074

FUTURE DEVELOPMENTS.

The most important need of the future is an increase by the Board of Estimate and Apportionment of 10 per cent. to the salaries of all the employees of the Zoological Park who receive less than \$1,300 per year. It is hoped that this end can be accomplished in the making up of the financial budget of expenditures for 1918, and every effort will be made to bring about that result. An additional appropriation of \$11,480 will be required for this purpose. We also must have a fund for necessary repairs to buildings, at least \$10,000 a year, such as is provided for the American Museum of Natural History.

The Park is very greatly in need of a new entrance at the Pelham Avenue-Southern Boulevard corner, known as the Fordham entrance. The present old and cheap pavilion is most unrepresentative of the Park, the City and the Society. As an irreducible minimum the sum required is \$25,000.

The area between the Boston Road and the Bronx Lake is in a terrible condition. The feet of the multitude are wearing the banks away to an extent that is most serious, and something must be done about it, forthwith. It is our intention to rob other funds (if it be possible) in order to make a beginning this year, between the Boat House and the Buffalo Entrance. A stone wall is needed all along the eastern side of the Boston Road to stop the destruction of the bank above.

The southern end of the area east of the Bronx River needs about \$3,000 worth of development work, for the general good; but the money is not in sight.

The enormous cost of food for animals is causing us great anxiety. Although studies and efforts in all directions are being made to economize in food quantities and kinds, even the best economy will not reduce potatoes from \$12.00 per barrel to \$6.00. We are reducing the quantity of our animal rations, and experimenting to find the cheapest food that will be acceptable. We also intend to plant every acre of our land available for cultivation with potatoes, corn and other vegetables that will produce the most on the smallest space.

Just how we are going to feed our carnivorous animals without enormously increased expenditures, going far beyond our available funds, we can not imagine.

Respectfully submitted,

WILLIAM T. HORNADAY,

Director.

THE TROPICAL RESEARCH STATION

Bartica District, British Guiana.

William Beebe, Directing Curator; G. Innes Hartley, Research Associate;
Paul G. Howes, Research Assistant; Donald Carter, Collector;
Anna Taylor and Rachel Hartley, Artists.

This undertaking is a direct outcome of the dynamic interest in scientific research in the Department of Birds. Inaugurated as a suggestion of the Curator, the idea was favorably received by the Executive Committee and Director Hornaday, and the plan has now crystalized into achievement. Even the first year's work may be regarded as thoroughly successful. Mr. Beebe, with a party of five assistants, left New York on the *Mayaro* on January 24, 1916, and returned on the *Guiana* on August 28, 1916.

After a short stay at Georgetown,* the Society accepted the offer of a house near Bartica, forty miles up the Essequibo River, at the very edge of the jungle. This was on the Hills Rubber Estate, and the manager, Mr. G. B. Withers, kindly allowed the use of "Kalacoon" for a period of six months. This house proved to be satisfactory in all respects, and within a week after acceptance we furnished it from the Georgetown stores in time to receive our first visitors, Colonel and Mrs. Theodore Roosevelt. Colonel Roosevelt had been interested in this idea from its inception, and the extension of his trip to British Guiana was with the idea of seeing the work started. His experiences at the Station and his opinions of the undertaking have been incorporated in an article in the January, (1917), issue of *Scribner's Magazine*, entitled "A Naturalist's Tropical Laboratory."

During the course of the next few months, we entertained a number of visitors from New York, and also many of the officials of the British Guiana Government, including the Governor, Sir Walter, and Lady Egerton, the Hon. Cecil and Mrs. Clementi, and the Hon. J. J. Nunan. It is impossible even to mention all those who placed us under obligation, and whose hospitality and

* Many of the less important details of the establishment of the Research Station may be found in an article in the Zoological Society *Bulletin* for July, 1916.



STAFF OF RESEARCH STATION, KALACOOON LABORATORY
Mr. Beche is in the center. Mr. Hartley at the left and Mr. Howes at right.

whole-souled friendship encouraged us in our new work in a foreign country. In addition to the above we cannot omit the names of Mr. Frère and Mr. Beckett, Mr. and Mrs. Hayes, Mr. and Mrs. Enis, Prof. Harrison and Mr. Rodway, Mr. Goring and Mr. Cunningham. The Trinidad Steamship Company left nothing undone to facilitate our work and make comfortable our transportation and that of our specimens.

With Indian assistants, we mapped out a zone of jungle equal to that of Central Park, and confined almost all our efforts to this area. We found it an ideal place for our work. Mosquitoes were absent, as were all noxious insects except *bête rouge*. The heat of the day was not oppressive, especially in the jungle, and the nights were always cool. Poisonous serpents were very rare, and none of the wild animals, even the jaguars, ever gave us a moment's thought of danger. Vampire bats were abundant, but never molested us. Bathing in the river was perfectly safe, *although perai were everywhere*. On the whole, out-door work was as safe and comfortable as corresponding research in the vicinity of New York City in summer.

Seven years ago, the writer published a volume on the natural history of British Guiana. "Our Search for a Wilderness," which may be considered as adumbrating the present undertaking. A few months ago Mr. Charles Chubb published in London a work on "The Birds of British Guiana," which, by the paucity of notes on the life histories of birds, emphasizes the untouched character of this field of scientific work.

Up to January, 1917, the following articles had appeared in connection with the Research Station:

- The Establishment of the Tropical Research Station, William Beebe. *Zoological Society Bulletin*, July, 1916.
- Noosing a Bushmaster. William Beebe. *Zoological Society Bulletin*, July, 1916.
- The Cock-of-the-Rock. L. S. Crandall. *Zoological Society Bulletin*, July, 1916.
- Nestling Hoatzins at Home. William Beebe. *Zoological Society Bulletin*, September, 1916.
- Folio of Photographs from the Research Station. P. G. Howes. *Zoological Society Bulletin*, September, 1916.
- Tropical Specimens. R. L. Ditmars. *Zoological Society Bulletin*, September, 1916.
- Wasps at the Tropical Research Station. P. G. Howes, *Zoological Society Bulletin*, September, 1916.
- Notes on the Perai. G. I. Hartley. *Zoological Society Bulletin*, November, 1916.
- The New Jungle-bound Research Station. Howes and Beebe. *New York Tribune*, December, 1916.

The Alligators of Guiana. William Beebe. *Zoological Society Bulletin*, January, 1916.

A Naturalist's Tropical Laboratory. Theodore Roosevelt. *Scribner's Magazine*.

The Pomeroon Trail. William Beebe. *Atlantic Monthly*, January.

The latter essay is the first of a series of six relating to general aspects of life in British Guiana. Perhaps three-quarters of the scientific notes and an equal amount of the field work and laboratory investigation are too unconnected and incomplete for publication at the present time. But a number of subjects were finished and these have been combined in a volume which will appear before March 1. At the suggestion of Prof. Osborn this has been called "Tropical Wild Life in British Guiana," and is considered as the joint production of Beebe, Hartley and Howes, with an introduction by Colonel Roosevelt. My own share in it has been of the nature of general ecological studies and of young birds. Mr. Hartley worked more particularly on the development of embryos, and Mr. Howes confined his attention to the life histories of social wasps and bees.

As a resumé of the work of the year, I offer the table of contents of this volume:

PART I, BY WILLIAM BEEBE.

- I—Establishment of the Station.
- II—Historical Bartica.
- III—Early Naturalists at Bartica.
- IV—The General Field of Work.
- V—The Open Clearing.
- VI—The Jungle.
- VII—The Bird Life of Bartica District.
- VIII—List of the Birds of Bartica District.
- IX—Akawai Indian and Colonial Names of Birds and Mammals.
- X—Methods of Research.
- XI—Ornithological Discoveries.
- XII—Notes on Hoatzin Nestlings.
- XIII—The Homes of Toucans.
- XIV—Notes on the Grey-backed Trumpeter.
- XV—The Tinamou of Bartica District.
- XVI—A Day in Kalacoon Compound.
- XVII—Nesting Seasons and Broods of Tropical Birds.
- XVIII—The Alligators of Guiana.

PART II, BY G. INNESS HARTLEY.

- XIX—Notes on the Development of the Jacana.
- XX—Notes on the Development of the Ani.
- XXI—Notes on a Few Embryos.
- XXII—Nesting Habits of the Grey-breasted Martin.
- XXIII—Development of the Wing in Birds.
- XXIV—Notes on the Perai.

PART III, BY PAUL G. HOWES.

- XXV—The Bees and Wasps of Bartica.
- XXVI—Two Potter Wasps.
- XXVII—Larval Sacrifice.
- XXVIII—The Black Reed Wasp.
- XXIX—The White-footed Wasp.
- XXX—The Forest Shell Wasp.
- XXXI—The One-banded Dauber.
- XXXII—The Blue Huntress.
- XXXIII—Paralyzed Provender.
- XXXIV—Controlled Pupation.

The richness of the small area of jungle in which we worked in the vicinity of Bartica is attested by the fact that there occur within its limits at least three hundred and fifty-one species of birds; quite 45 per cent. of the whole number recorded from the entire Colony. We made notes on more than fifty species of mammals, including all the more representative groups of South America. These will be elaborated, added to and published at the end of the ensuing year. A single Akawai Indian hunter kept us supplied with excellent meat for many months from the jungle immediately about the Station. Yet, at the end of our stay, there seemed no diminution in the number of game birds and animals, even a short distance away.

Attention is particularly called to the many discoveries, such as the eggs and young of toucans, the nestlings of various birds such as the trumpeters, the photographing for the first time of the quadrumanal habits of the hoatzin, and the no inconsiderable number of nests and eggs new to science. This was all incidental, as the collecting of specimens is in no way a primary object of the Station's work. Subjects of special study were the tropical seasons and their effects on the broods of birds;

the study of certain problems by the potash method of rendering cartilage visible in the complete embryo; and the photographing of new or undescribed life stages in mammals and birds, and of pupae and nests of social wasps.

Over four hundred negatives of various scientific subjects were made, mostly the work of Paul Howes. Many will be used as illustrations in the volume of researches. A number of anthropological photographs were made of the various tribes of Indians and as complete as possible a list of Akawai names for mammals and birds. Miss Taylor made many careful water-color studies of tropical flowering plants, a wholly new field of botanical endeavor in this part of the world, which will be carried much farther next year.

The only co-operative work for which time could be found, was undertaken for the American Museum of Natural History. A collection of several hundred preserved amphibians and reptiles was made, in addition to which it was arranged that all specimens which died at the Zoological Park should be added to the Museum's collection. Besides this, specimens, materials, photographs, and paintings were assembled and brought north for two large groups, one of red howler monkeys and one of hoatzins.

The most searching and the fairest test of the success of any live animal collecting is the record of the creatures which arrive safely and become adapted to life in their new surroundings. So, I present the lists, only of those that reached New York and the Zoological Park in health.

Although this phase of the work was wholly subordinate to the scientific investigation which was the main object of the Station, we were able to add over three hundred mammals, birds and reptiles to the collections of the Zoological Park. These represent a total value of well over one thousand dollars. They are as follows:

31 Mammals.	16 Snakes.
154 Birds.	8 Tortoises and Turtles.
3 Alligators.	80 Frogs and Toads.
10 Lizards.	13 Fish.

Without going into too great detail, a few of the more interesting specimens may be continued. Three species of opossums

were obtained, several pacas, a yaguarundi cub, agoutis, ocelot, a very interesting wild dog, and some jungle rats which have not yet been identified. Among the birds were dusky parrots, white-necked rails, yellow-headed vultures, anis, moriche orioles, curassows, motmots, jays, cotingas and toucans. The two most unusual birds were cock-of-the-rock and an imThurn's blackbird.

Many unusual frogs and toads were secured, one of which was a huge specimen of the marine toad. The grotesque sharp-nosed toad is as brightly colored as it is rare. The coppery-red five-fingered frog resembles our bullfrog, but the nursing frogs which carry their tadpoles on their back are quite unlike any of our northern forms. Others, of whose habits we know nothing, are the moustached, the long-snouted and the white-headed frogs. A five-foot electric eel was caught in the Mazaruni, almost in front of Kalacoon, and successfully shipped north in a metal lined case. When received full force, the shock from its batteries was almost sufficient to knock a man off his feet.

For the coming year, anticipating that it will be possible to continue the work of the Station, an option at an exceedingly reasonable price has been obtained for the season's use of an old river steamer, out of commission. This is one hundred feet long, has three decks and is admirably adapted for use as a floating laboratory and houseboat. It will facilitate the research work, and afford accommodations for the scientists from Harvard, Princeton and elsewhere who have repeatedly expressed a desire to make use of the facilities of the Station for carrying on certain specific lines of research.

WILLIAM BEEBE.



MARRIED HAMLET (DERMATOLEPIS MARMORATUS)

REPORT OF THE DIRECTOR OF THE AQUARIUM

TO THE BOARD OF MANAGERS.

THE Aquarium, as one of the public museums of New York, continues, despite its unfailing attraction for the people, to represent a neglected opportunity.

Possessing a greater interest for the public than any other institution, and forced to carry on the office work of a great museum without the proper facilities for doing so, the fund for its maintenance at present is less than that provided ten years ago. It remains, through lack of space and lack of consideration by the authorities, in a condition of arrested development.

Its unique possibilities for usefulness and greater attractiveness have long been apparent. They have, indeed, been set forth persistently by its officers, yet its prospects for early improvement are not encouraging.

We have been repeatedly assured that the enlargement of the building by the City on the comprehensive plans prepared in 1911, is altogether impossible. We are now informed that the much needed alterations in the present structure, according to the very modest plans prepared during the past year, cannot be considered at all.

The only hope for the moderate improvements desired would appear to depend on the faint prospect of securing funds from private sources.

The alterations proposed include the removal of the mechanical department of the Aquarium from the rear of the building to the unused basement at the front, and the construction of a third story above the present office section. The first would permit of greater efficiency in operating the mechanical department and allow the reclaiming of valuable space for exhibits. The second would provide space for office work that has always been carried on under serious drawbacks. Included with them were



OLD EXHIBITION TANKS

Photograph showing a section of the old tanks at the Aquarium before they were enlarged.

several other improvements that would eliminate disadvantages of long standing, particularly the invasion of the basement by the sea at high tides.

In the meantime the Aquarium is cumbersome to operate and cramped for space.

After many years of effort directed toward the elimination of various defects, we find ourselves at a standstill. There is little more that can be done without a fund sufficiently large to enable us to deal with the really serious hindrances that have always confronted us. The cost of the above described improvements was estimated at \$90,000.

IMPROVEMENTS FROM THE MAINTENANCE FUND.

Larger Exhibition Tanks.—The most important improvement made in the Aquarium during the year or in fact during the past six years was the enlargement of several glass-fronted exhibition tanks on the ground floor. By combining the original small-sized tanks in pairs, removing the partitions and extending the back walls to the outer wall of the building, it has been possible to construct tanks of large size, similar to those in the larger aquariums of Europe. Some of these enlarged tanks have a length of about fifteen feet and all of them, a depth, back from the glass, of twelve feet.

The increased water space has made it possible to greatly enlarge the exhibits in each tank. The contents of the old reserve tanks, formerly located behind the exhibition tanks, have been transferred to the newly enlarged tanks and thus added to the collection on exhibition. The reserve tanks will be located elsewhere and restocked.

With the return of the next summer's collecting season, it will be possible to stock these tanks to their full capacity, and also to place behind the glass many large specimens that have hitherto been kept only in the large open floor pools.

Four tanks of large size were constructed during the summer by the employes of the Aquarium, at a cost per tank of not more than \$50 for materials. The extra labor thrown on our own force was, however, too great to be continued. By enforcing special economies it was possible to accumulate funds sufficient for the construction of seven more tanks of large size, for which a contract was awarded on December 7.



ENLARGED EXHIBITION TANKS

Showing the manner in which the tanks have been extended back to the outer wall of the building. The iron footbridge over them has not yet been installed.

The splendid exhibition tanks created in this way—eleven in number—have entailed no expense aside from the regular maintenance fund. They have quadrupled the swimming space of the tanks and afforded much better conditions of life for their living occupants.

An equally important point is the increased attractiveness of the display in each tank, the greater depth of water (back from the glass) giving an “under water” effect that is not possible in tanks of small size. The increased tank space also has made it possible to increase the number of species that may be confined together in each tank.

During the fourteen years that the Aquarium has been under the management of the Zoological Society, it has been improved in many ways, chiefly in its mechanical department; but these improvements are not such as are apparent to the visitor, the machinery of operation being largely out of sight. The enlarged exhibition tanks represent an improvement in the exhibition of specimens, so marked that it cannot fail to meet with the approval of the public.

Having been assured by the City Fire Department that the operation of the refrigerating plant in the Aquarium would no longer be permitted until it could be separately and tightly housed against all possible danger to visitors, its removal to a new position became imperative.

This work will be undertaken at once, as the cold water system must be ready for operation sometime in May. Being a part of the permanent and necessary equipment of the building, its removal and housing should not be chargeable to the maintenance fund already heavily taxed on account of the increased cost of coal and other supplies.

In order to make available for salt water exhibits two of the enlarged exhibition tanks of the fresh-water series, an extension of piping was made. When cold weather came, an unused wooden storage tank was converted into a water heater, which made it possible to exhibit in this water system many local sea fishes not to be found along our shores in winter.

This improvement will be of great value, as marine species of fishes and invertebrates are much more numerous than fresh water species and should have a larger representation in our collection than has hitherto been possible.

On the evening of December 27, the various Zoological Societies attending the New York meeting of the American Association for the Advancement of Science were entertained at the Aquarium, 520 men being present.

The entertainment took the form of a smoker, which was very emphatically pronounced the most satisfactory feature of the whole week as it gave the delegates an unusual opportunity for an evening of informal talk. The Director and the Aquarium Committee acted as a reception committee.

The annual reception at the Aquarium to members of the Zoological Society was held on the evening of May 1, when 355 guests were present.

On July 30, an explosion occurred on the New Jersey side of the Bay, which resulted in the breaking of 64 roof skylights and a large number of the ceiling skylights in the Aquarium. The roof skylights were repaired without delay, and the bill presented to the Commissioner of Parks, to be paid from Park Department funds. An estimate was made for the repair of the ceiling skylights and submitted to the Commissioner of Parks, who applied for special revenue bonds. The latter repairs have not yet been made, and if longer delayed there will result a considerable loss of heat during the winter.

THE EXHIBITS.

The living exhibits of the Aquarium are at the present time in excellent condition, and all available exhibition space is fully occupied. The total number of specimens in the building is 5,992, and the number of species 199. Of fishes there are 4,196 specimens; invertebrates, 1,306; amphibians, 365; reptiles, 123, and mammals, only 2—a sea lion and a manatee.

The manatee, (*Manatus inunguis*), is the first specimen of the Amazon River species to be exhibited in this country. It was secured through the help of Captain Torrible of the Booth Line Steamer *Stephen*. This manatee, which is five feet long, was received on July 3, and is apparently in the best of health at the close of the year.

During the summer there was much public interest in sharks as the result of accidents on the coast of New Jersey, where three bathers lost their lives. The Aquarium secured sev-

eral specimens, but only one was received alive. It measured nearly eight feet in length and weighed 181 pounds. This shark lived in one of the large floor pools for five weeks and attracted a great deal of attention. Large sharks usually do not live longer than a week or two in captivity. The sharks which did not reach the Aquarium alive were each exhibited for a few days on ice, which gave visitors the opportunity of examining them closely. These included the following species: Milbert's Shark, (*Carcharhinus milberti*), Sand Shark, (*Carcharias littoralis*), Blue Shark, (*Prionace glauca*), and Short-nosed Shark, (*Hypoprion brevirostris*).

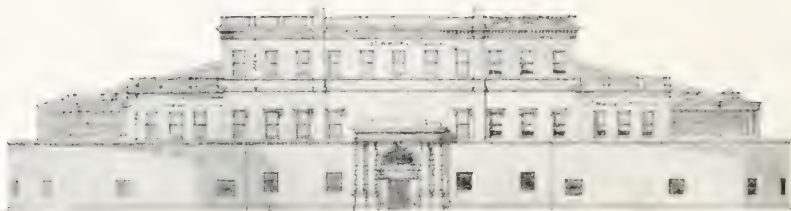
Early in June, Mr. Mowbray, of the Aquarium Staff, made a large collection of tropical fishes at Turk's Island, Bahamas, but all of these specimens were lost during a hurricane which struck that island a few days before the arrival of the steamer on which they were to be shipped. In November, Mr. Mowbray secured 347 tropical fishes, representing 42 species, at Key West, Florida.

Numerous local sea fishes were collected from the shores of Long Island and New Jersey, and a great many fresh water species from the various lakes in the City parks.

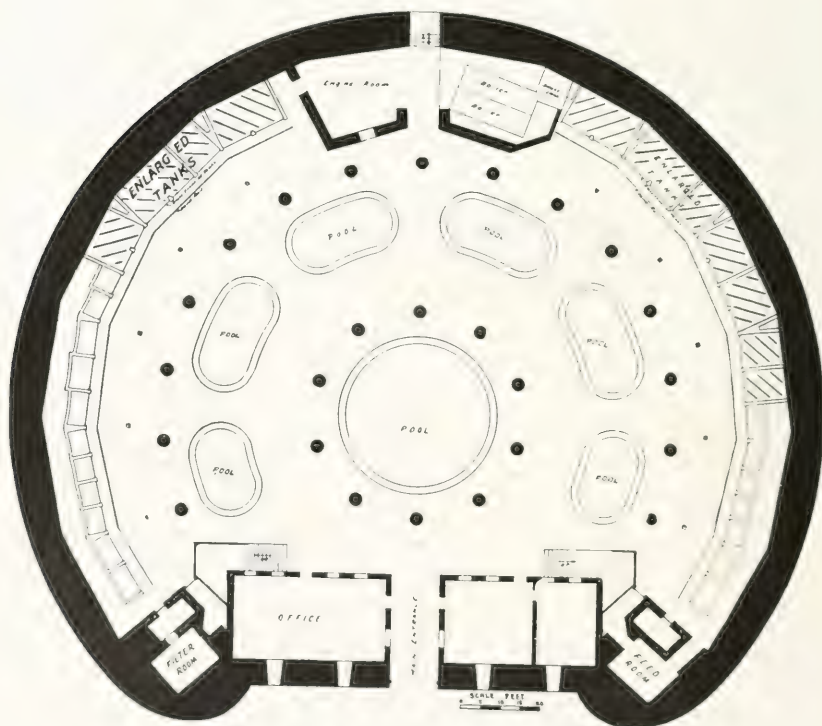
The fish hatchery in the Aquarium was kept in operation as usual through shipments of fish eggs from Government hatcheries. Eggs of the smelt, 2,000,000 in number, were also supplied by the State Conservation Commission. The species hatched included brook, rainbow and black-spotted trout, yellow perch, pike-perch, and smelt. The young fry were distributed as follows: In the lake at Scarsdale, an enlargement of Bronx River, 7,500,000 yellow perch; in the Hudson River at New York City, 1,950,000 smelt; to the State Conservation Commission, 3,500,000 pike-perch; to the Interstate Park Commission, 1,450,000 pike-perch; to the New Jersey Fish Commission, 300 black-spotted trout; to waters in Orange County, New York, 1,500 rainbow trout and 500 brook trout.

EMPLOYEES.

The only changes among the officers of the Aquarium were the resignation of Mr. Chapman Grant, who re-entered the U. S. Army, and the appointment of Miss Ida Mellen as Secretary,



FRONT ELEVATION OF THE AQUARIUM SHOWING PROPOSED THIRD STORY



GROUND PLAN OF THE AQUARIUM

The shaded portions show the location of the enlarged exhibition tanks.

The working force rendered excellent service. As previously stated, four of the large exhibition tanks were built during the summer by our own men. Advantage was taken of the resignation of one attendant and of Mr. Chapman Grant, to increase the compensation of all persons in the Aquarium receiving less than \$1,000 per annum, these raises being deemed urgent on account of the increased cost of living. The vacant attendant's position was not refilled, the other vacancy being refilled at a lower rate of compensation.

The Director takes pleasure in calling attention to the cheerfulness and efficiency with which the employes have performed the duties assigned to them.

Miss Mellen has lettered, numbered and card-catalogued the collection of Aquarium pamphlets and monographs, about 900 in all, and has in preparation an index of the entire library, consisting of some 850 works, with special, separate indices for works in sets, such as the *American Naturalist*, 41 volumes; Reports of the Massachusetts Fish Commission, 1868-1910, etc. She has also indexed the collection of Aquarium photographs taken by Mr. Sanborn and others from time to time and consisting of about 950 prints arranged in 10 large, loose-leaf volumes. Each volume now bears a label and a special index, and there is, besides, a separate, general index, by means of which any picture desired in any one of the 10 volumes may be turned to immediately.

AID TO SCHOOLS AND TEACHERS.

During the year, small forms of marine life for stocking school aquaria were supplied to 36 schools and colleges in Greater New York. Many teachers in the city schools bring their classes to the Aquarium once a year. In 1916, there were 235 such classes accompanied by teachers, a total of 9,546.

LABORATORY WORK.

Dr. G. A. MacCallum continued his studies of the parasites of fishes and prepared a second paper on the subject which was published by the Zoological Society during the summer.

Dr. Sergius Morgulis continued his investigations on nutrition in fishes, under the auspices of the U. S. Bureau of Fisheries.

Dr. W. H. Bates experimented for several months on the eyes of fishes, in continuation of his studies of the previous year.

Specimens of fishes and invertebrates were supplied from time to time to investigators connected with institutions in New York and elsewhere, whenever they could be spared from the collections in the Aquarium. A laboratory for the accommodation of zoological workers is still one of the needs of the Aquarium.

ATTENDANCE.

The number of persons annually visiting the Aquarium has been considerably reduced since the commencement of the war in Europe. In 1915 the annual attendance, which for many years had exceeded 2,000,000, fell to 1,538,831. The attendance in 1916 was 1,499,667—a further decrease of 39,164.

As stated in last year's report, immigration from Europe and tourist travel from the United States have nearly ceased. The number of persons passing through New York has, in consequence, been sufficiently reduced to account for the decreased attendance at the Aquarium.

A comparison of the totals, for 1915 and 1916, show that the attendance is becoming stationary and that a further decrease in visitors is improbable.

TABLE OF ATTENDANCE, 1916.

January	visitors.....	72,238	Daily average.....	2,330
February	“	56,882	“ “	1,961
March	“	84,681	“ “	2,731
April	“	130,888	“ “	4,362
May	“	149,484	“ “	4,822
June	“	148,091	“ “	4,936
July	“	237,303	“ “	7,654
August	“	194,602	“ “	6,148
September	“	137,867	“ “	4,595
October	“	115,061	“ “	3,711
November	“	86,240	“ “	2,874
December	“	86,330	“ “	2,784
Total	“	1,499,667	“ “	4,108

For many years daily observations have been made at the Aquarium on the temperature and salinity of the water of the Harbor as pumped into the large floor pools of the building. These are the only records of the kind kept in the City, and have been frequently consulted by City officials. Their publication in the ANNUAL REPORT keeps them in convenient form for reference at the Aquarium and more available for general use.

Record of monthly mean temperatures and specific gravities of the water of New York Harbor at the Battery, during the year 1916.

(From daily observations made by Mr. W. I. DeNyse.)*

Months	Temperature of water	Specific Gravity
January	41	1,012
February	42	1,012
March	38	1,013
April	41	1,009
May	50	1,011
June	57	1,012
July	64	1,013
August	69	1,014
September	69	1,015
October	63	1,016
November	56	1,016
December	49	1,013

Respectfully submitted,

CHAS. HASKINS TOWNSEND,
Director.

*Density observations were made with samples of water brought to a temperature of 60 degrees Fahr.

REPORT OF THE PROSECTOR

TO THE BOARD OF MANAGERS.

I BEG to submit the following report of the operations of the Prosector's Department for the calendar year 1916:

Material received.—A total of 186 specimens divided as follows:

Primates	60	Marsupials	9
Carnivores	42	Cetaceans	2
Ungulates	12	Birds	24
Rodents	21	Reptiles	13
Edentates	3		
		Total	186

This material has, as in the past, been utilized for three purposes:

1. *Investigation.*—The receipt of some much desired forms, especially among Primates and Marsupials, has enabled the Department to practically complete the detailed work on the morphology and phylogeny of the mammalian respiratory tract, which has been prosecuted for a number of years. As soon as the question of adequate illustration can be met satisfactorily, the Memoir will be published through the Wistar Institute of Philadelphia.

A number of forms of great value and importance to the continued investigation of the salivary structures were obtained and prepared during the year. It is hoped that the Department will be able to issue in the near future a publication supplementary to the volume which has already appeared on this subject.

The brains of all specimens received in sufficiently fresh condition have been intrusted to Professor Tilney for neurological investigation.

2. *The Research Collection* has, as usual, received large and valuable additions in the form of finished preparation, notably of the respiratory, alimentary and uro-genital tracts.

3. *Instruction*.—Portions of the primate, carnivore, marsupial and rodent material were used during the year for a course in comparative myology.

Respectfully submitted,

GEO. S. HUNTINGTON,
Prosector.

Treasurer's Report

FOR THE YEAR ENDING DECEMBER 31, 1916.

RECEIPTS AND EXPENDITURES

OF THE

Income Account

Schedule 1.

Unexpended Balance as of December 31, 1915:		
Available for expenditure during 1916	\$19,489.57	
Received from Sustaining Memberships in advance		
for 1917, 1918	80.00	
Received on account of subscriptions to Oil Paintings		
of American Wild Game, for 1916, 1917, 1918,		
1919	3,770.65	
<i>Investments:</i>		
5,000 New York, Lackawanna & Western Terminal		
4% Bonds	4,950.00	\$28,290.22

RECEIPTS.

Annual Dues	\$17,070.00	
Sustaining Memberships	600.00	
Special Subscriptions:		
William Colgate	\$10.00	
Ladies Auxiliary	12.00	22.00
Aquarium Publications (sales)	82.72	
Transfer from Endowment Fund Income Account	15,211.00	
Interest on bank balances	599.77	
Interest on investments	200.00	33,785.49

\$62,075.71

EXPENDITURES.

Annual and separate Reports	\$ 2,718.10
Bulletin	3,383.20
Photographs and slides	1,230.91
Preparation and mailing of circulars	1,928.45
Zoologica	887.12
Cost of distribution of publications	432.07
Expenses, Annual Meeting	624.50
Expenses of Receptions	753.50
Treasurer's office expenses	1,350.00
General office expenses	3,416.46
Audit of accounts	600.00
Liability insurance	1,072.37
Salary of Secretary	5,000.00
Aquarium expenses	233.48
Office supplies and printing	3,187.23
Aquarium specimens	2,193.57
Heads and Horns (publications and labels)	25.00
Heads and Horns Fund (transfer)	600.00
Library Fund (transfer)	500.00
Salary of Assistant Secretary	750.00

Carried forward \$30,885.96

<i>Brought forward</i>	\$30,885.96	
Aid to Employees	450.00	
Pension Fund Income Account	3,915.00	
Art Gallery Fund (transfer)	3,770.65	
Engineering expenses	425.30	
Live animals	3,904.00	
Zoopathologica	351.39	
Insurance	257.50	
Employees co-operative store	700.00	
Pheasant Monograph	200.00	
Miscellaneous expenses	2,284.44	47,147.24
Unexpended balance as of December 31, 1916:		
Available for expenditure during 1917	10,928.47	
Received from Sustaining Memberships in advance for 1918	40.00	
<i>Investments:</i>		
\$1,000 New York, Lackawanna & Western Terminal		
4% Bonds (one bond sold during year for \$990)	3,960.00	14,928.47
		\$62,075.71

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Maintenance Fund
ZOOLOGICAL PARK
Schedule 2.

RECEIPTS.

Received from the City on account of Park Maintenance Appropriation of \$197,074.35 for the year	\$178,273.87	
Due from the City on account of Park Maintenance Appropriation	18,800.48	\$197,074.35

EXPENDITURES.

Maintenance of buildings and care of collections	57,389.14
Maintenance and care of grounds	51,472.87
General administration	19,336.00
Food for animals	35,514.25
Fuel	10,546.62
Lumber	2,301.84
Uniforms and miscellaneous wearing apparel	1,727.82
Plumbing materials	1,528.70
Hire of horses and vehicles	1,518.94
Electric service	1,190.25
Paints and oils	1,100.20
Miscellaneous materials	927.54
Stationery and printing	903.11
Miscellaneous supplies	855.27
Telephone service	789.75
Steel and iron	787.68
Office supplies	765.68
Miscellaneous equipment	746.88

Carried forward\$189,402.54

<i>Brought forward</i>	\$189,402.54	
Tools and machinery	737.52	
Sand, cement and brick	725.55	
Bolts, nails and hardware	678.47	
Janitors supplies	642.82	
Furnace repairs and replacements	561.37	
Fencing and netting	465.48	
Disinfectants	442.25	
Medical attendance (employees)	368.00	
Expressage and deliveries	328.21	
Janitor's equipment	319.10	
Fuel oil and gasoline	271.78	
Drugs and medicines	198.52	
Miscellaneous repairs	194.35	
Park Baskets	180.00	
Sanitary service	168.00	
Rubber hose	140.01	
Office furniture and fixtures	124.12	
Painting labels	124.00	
Nursery stock and seeds	120.98	
Glazier's supplies	103.29	
Ice	100.70	
Lubricating oils	99.20	
Painters equipment	92.37	
Electrical materials	91.20	
Nursery supplies	68.83	
Surgical instruments and appliances	67.03	
Apparatus and machinery repairs	61.17	
Gas service	51.68	
Awnings and shades	33.75	
Mats and floor coverings	31.00	
Telegraph, cable and messenger service	30.46	
Medical and surgical supplies	23.25	
Harness and vehicle repairs	15.75	
Engineering supplies	10.60	
Miscellaneous expenses	1.00	\$197,074.35

H. R. MITCHELL,
Chief Clerk.
 January 12, 1917.

PERCY R. PYNE,
Treasurer.

Ground Improvement Fund

Schedule 3.

Unexpended balance as of December 31, 1915:

Erection and Equipment of Power Plant and Work Shops	\$	91.19	
Construction of Fences and Other Permanent Im- provements		3.90	
Erection of New Zebra House	10.00	\$	105.09

Balance available for expenditure, December 31, 1916:

Erection and Equipment of Power Plant and Work Shops	\$	91.19	
Construction of Fences and Other Permanent Im- provements		3.90	
Erection of New Zebra House	10.00	\$	105.09

1915 GROUND IMPROVEMENT ACCOUNTS

Construction of Hospital Building:

Balance available, December 31, 1915	\$	3,702.90
--	----	----------

EXPENDITURES.

<i>By the Zoological Society</i>	\$	887.62	
" " " " <i>through Park Department</i> ..		297.60	1,185.22
Balance available, December 31, 1916			2,517.68
	\$	3,702.90	

Construction of Sliding Door and Reinforcing Elephant House Fence:

Balance available, December 31, 1915	\$	111.14
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EXPENDITURES.

<i>By the Zoological Society</i>	\$	111.00
Balance available, December 31, 1916		.14
	\$	111.14

New Paint and Oil Storage Shed:

Balance available, December 31, 1915	\$	143.75
--	----	--------

EXPENDITURES.

<i>By the Zoological Society:</i>		141.47
Balance available, December 31, 1916		.28
	\$	143.75

Poultry Breeding House:

Balance available, December 31, 1915	\$	.63
Balance available, December 31, 1916	\$	.63

Paving Bottom of Duck Pond:

Balance available, December 31, 1915	\$	2,059.66
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EXPENDITURES.

<i>By the Zoological Society</i>	\$	942.89	
" " " " <i>through Park Department</i>		1,082.73	2,025.62
Balance available, December 31, 1916			34.04
	\$	2,059.66	

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Animal Fund

Schedule 4.

Unexpended balance as of December 31, 1915:

Cash in Bank	\$ 5,095.31	
Cash on hand	100.00	\$ 5,195.31

RECEIPTS.

Special Subscriptions:

Ogden Mills	\$1,000.00	
Watson B. Dickerman	500.00	
Lispenard Stewart	500.00	
James B. Ford	500.00	
Henry M. Tilford	500.00	
In Memoriam	500.00	
George C. Clark	250.00	
J. P. Morgan	250.00	
Jacob H. Schiff	250.00	
Frank K. Sturgis	250.00	
Louis Boury	150.00	
Mrs. Wm. G. Nichols	100.00	
L. S. Thompson	100.00	
Abram G. Nesbit	100.00	
Miss Eleanor deG. Cuyler	100.00	
John D. Archbold	100.00	
James Douglas	100.00	
Mrs. Finley J. Shepard	100.00	
Mrs. H. P. Davison	100.00	
William R. Coe	100.00	
Wm. C. Osborn	100.00	
Miscellaneous	2,085.00	\$ 7,735.00

Zoological Society of Philadelphia	2,000.00	
Cadwalader Animal Fund (transfer)	1,288.89	

Receipts from Park:

Sale of animals	\$1,352.00	
Checking	29.55	
Miscellaneous	85.17	
Privilege Account, on account of 1916 receipts	2,000.00	3,466.72
		14,490.61
		\$ 19,688.92

EXPENDITURES.

Mammals	\$ 5,066.88	
Birds	2,950.80	
Reptiles	1,184.27	
Insect Collection	169.17	9,371.42
South African Expedition		6,000.00
Express and other charges	\$ 1,118.46	
Travelling and other expenses	246.24	1,364.70

Unexpended balance as of December 31, 1916:

Cash in Bank	\$ 2,852.80	
Cash on hand	100.00	2,952.80
		\$ 19,688.92

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Stokes' Bird Fund

Schedule 5.

Unexpended balance as of December 31, 1915:

Cash in Bank	\$ 277.29	
Investment: \$5,000 Illinois Central Railway 4% Gold Bonds	5,056.46	\$ 5,333.75

RECEIPTS.

Interest on investment		200.00
		\$ 5,533.75

EXPENDITURES.

Preservation of bird life		418.75
Unexpended balance as of December 31, 1916:		
Cash in Bank	\$ 58.54	
Investment: \$5,000 Illinois Central Railway 4% Gold Bonds	5,056.46	5,115.00
		\$ 5,533.75

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

National Collection of Heads and Horns

Schedule 6.

Unexpended balance as of December 31, 1915..... \$ 320.36

RECEIPTS.

Special Subscriptions:		
Watson B. Dickerman	\$ 175.00	
John J. Paul	15.00	190.00
Income Account (transfer)		600.00
		\$ 1,110.36

EXPENDITURES.

Heads and Horns	\$ 1,017.90	
Express and other charges	13.57	1,031.47
Unexpended balance as of December 31, 1916.....		78.89
		\$ 1,110.36

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Library Fund

Schedule 7.

Unexpended balance as of December 31, 1915..... \$ 91.65

RECEIPTS.

Income Account (transfer) 500.00

\$ 591.68

EXPENDITURES.

Subscription to periodicals \$ 118.56
 Books, Pamphlets, etc. 178.82
 Express and other charges 2.01 299.39

Unexpended balance as of December 31, 1916..... 295.29

\$ 591.68

H. R. MITCHELL, *Chief Clerk.*
 January 1, 1917.

PERCY R. PYNE, *Treasurer.*

Maintenance Fund

AQUARIUM

Schedule 8.

RECEIPTS.

Received from the City on Account of Aquarium Maintenance Appropriation of \$47,000.00 for the year..... \$40,266.32
 Due from the City on account of Aquarium Maintenance Appropriation 6,730.11
 Unexpended balance 3.57 \$47,000.00

EXPENDITURES.

Salaries \$32,666.97
 Fuel 4,614.26
 Fish food 1,647.25
 Office supplies 209.23
 Laundry, cleaning and disinfecting supplies..... 108.40
 Refrigerating supplies 100.13
 General plant supplies 362.71
 Office equipment 85.33
 General plant equipment 1,675.72
 General plant materials 682.67
 Repairs *2,736.97
 Lighting 1,141.90
 Expressage 280.82
 Telephone 148.51
 Contingencies 141.06
 Wearing apparel 91.50
 Unexpended balance 3.57 \$47,000.00

ROBERT SUTCLIFFE,
Clerk.
 January 29, 1917.

PERCY R. PYNE,
Treasurer.

* Includes \$1,800.00 contract for alteration of tanks, but not actually disbursed at December 31, 1916.

Endowment Fund

Schedule 9.

Funds as of December 31, 1915:

Cash in Bank	\$ 1,972.80	
Investments at cost	338,340.00	\$340,312.80

RECEIPTS.

Endowment Fund:

Estate of Mrs. Morris K. Jessup

8,750.00

Life Memberships

2,700.00

\$351,762.80

Investments as of December 31, 1916, at cost:

\$20,000 Westchester Racing Association 5% First Mortgage Bonds	\$ 20,000.00	
3,000 Second Mortgage, Clara N. Gibert and others, 6% over land and buildings, Broadway and 17th Street	3,000.00	
5,000 Colorado & Southern 4% Bonds	4,750.00	
5,000 Michigan Central R. R. Co. 4% Bonds	4,950.00	
10,000 New York City 1957 4% Corporate Stock	9,925.00	
10,000 New York City 1957 4% Corporate Stock	9,962.50	
20,000 New York City 1958 4% Corporate Stock	19,875.00	
10,000 New York City 1958 4% Corporate Stock	9,962.50	
13,400 New York City 1965 4½% Corporate Stock	13,651.25	
10,000 St. Paul, Minneapolis & Manitoba 4% Bonds	9,800.00	
50,000 U. S. Steel Sinking Fund 5% Bonds	51,812.50	
50,000 American Telephone & Telegraph 4% Bonds	45,000.00	
25,000 Rhode Island Suburban Ry. Co. 4% Bonds	21,250.00	
20,000 Chicago & Northwestern Ry. Co. General Mortgage 4% Bonds	19,750.00	
20,000 Vandalia Railroad Co. Consolidated Mortgage 4% Bonds	19,400.00	
5,000 Missouri & Illinois Bridge & Belt R. R. Co. 1st Mortgage 4% Bonds	5,000.00	
10,000 Chicago, Milwaukee & Puget Sound 1st Mortgage 4% Bonds	9,525.00	
12,000 Chicago, Milwaukee & Puget Sound 1st Mortgage 4% Bonds	11,250.00	
6,000 New York, Lackawanna & Western 4% Terminal Improvement Bonds	5,940.00	
20,000 Milwaukee, Sparta & Northwestern 1st Mortgage 4% Bonds	18,900.00	
25,000 New York & Westchester Lighting Company General Mortgage 4% Gold Coupon Bonds	19,750.00	
1,000 Morris & Essex R. R. 3½% Bond	876.25	
5,000 Illinois Central and Chicago, St. Louis & New Orleans 5% Bonds	5,000.00	
9,000 Baltimore and Ohio (Pittsburgh, Lake Erie & West Virginia) Ry. 4% Refunding Bonds	7,920.00	\$347,250.00

Uninvested balance, December 31, 1916.....

4,512.80

\$351,762.80

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Endowment Fund Income Account

Schedule 10.

RECEIPTS.

Interest collected from Endowment Fund Investment.....	\$15,228.00
	\$15,228.00

EXPENDITURES.

Accrued interest on bonds at time of purchase.....	17.00
Transferred to Income Account.....	15,211.00
	\$15,228.00

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Cadwalader Animal Fund

Schedule 11.

Unexpended balance as of December 31, 1915:

Cash in Bank	\$ 788.89
Investment: \$20,000 (at par) Illinois Central and Chicago, St. Louis & New Orleans joint 5% Bonds	20,000.00
	\$20,788.89

RECEIPTS.

Interest on investment	1,000.00
	\$21,788.89

EXPENDITURES.

Transferred to Animal Fund.....	\$ 1,288.89
Unexpended balance as of December 31, 1916:	
Investment: \$20,000 (at par) Illinois Central and Chicago, St. Louis & New Orleans joint 5% Bonds	\$20,000.00
Cash in Bank	500.00
	\$21,788.89

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Wild Life Fund

Schedule 12.

Unexpended balance as of December 31, 1915.....	\$ 648.64
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RECEIPTS.

Sale of "Our Vanishing Wild Life"	\$ 180.75
	\$ 829.39

EXPENDITURES.

Telegraph and express	\$ 17.59	
Miscellaneous expenses	82.50	100.09
Unexpended balance as of December 31, 1916.....		729.30
	\$	829.39

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Improvement and Repair Account

Schedule 13.

Unexpended balance as of December 31, 1915.....	\$ 1,762.36
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RECEIPTS.

Gate Receipts	\$ 8,455.10	
New York Association for Improving the Condition of the Poor	959.00	9,414.10
		\$ 11,176.46

EXPENDITURES.

Guard fence at elephant house.....	105.18	
Heating repairs	28.87	
Concrete benches	322.93	
Guard rails	128.52	
Tree pruning	578.67	
Miscellaneous	207.02	
Musk ox fences	709.77	
East side improvements.....	1,403.55	
Pheasant aviary	296.00	
Walk repairs	1,756.41	
Shelter pavilion	568.11	
Mammal house repairs	1,719.78	
Primates house	2.61	
Wild fowl pond	749.83	
Reptile house	201.70	
Automobile garage	701.91	
New storage shed	118.62	9,599.81
Unexpended balance as of December 31, 1916.....		1,576.65
		\$ 11,176.46

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Carnegie Pension Fund

Schedule 14.

Funds as of December 31, 1915:

Investments at cost \$100,066.25

Funds as of December 31, 1916:

Investments at cost:

\$25,000 Philadelphia & Baltimore First Mortgage 4%		
Gold Bonds	\$ 23,250.00	
25,000 Lehigh Coal & Navigation 4½ % Bonds	21,875.00	
25,000 Illinois Central 4 % Bonds	23,062.50	
5,000 Morris & Essex 3½ % Bonds	4,373.75	
25,000 Chicago & Northwestern 4 % Bonds	23,687.50	
1,000 Michigan Central 3½ % Bond	817.50	\$100,066.25

H. R. MITCHELL,
Chief Clerk.
 January 1, 1917.

PERCY R. PYNE,
Treasurer.

RECEIPTS AND EXPENDITURES

OF THE

Pension Fund Income Account

Schedule 15.

Uninvested balance as of December 31, 1915:

Deposited with Farmers' Loan & Trust Co.	\$4,595.77	
Deposited with Corn Exchange Bank (Bronx)	372.68	\$ 4,968.45

Investments at cost 10,075.00

RECEIPTS.

Interest on bank balances		75.12
Interest on bond investments		538.00
Dues collected from Zoological Society Employees		3,144.39
<i>Contributed by New York Zoological Society:</i>		
Interest on Carnegie Pension Fund Investments	\$4,335.00	
Cash payments, year 1916	3,915.00	*8,250.00
		\$27,050.96

EXPENDITURES.

Refund of dues with accrued interest to resigning members	217.12	
Clerical services	250.00	
Physical examinations (made by Dr. G. J. Van der Smitsen)	9.00	
Death benefits paid during year 1916	369.23	845.35
Investments at cost:		
\$5,000 New York City 4½ % Bonds	\$ 5,093.75	
5,000 Illinois Central and Chicago, St. Louis & New Orleans Ry. joint 5 % Bonds	4,981.25	

Carried forward \$ 10,075.00

*Balance of \$250.00 due from the Zoological Society on 1915 account included.

<i>Brought forward</i>	\$ 10,075.00	
†5,000 Milwaukee, Sault Ste. Marie & Atlantic Ry. first 4% Bonds	4,868.75	
†4,000 Baltimore and Ohio (Pittsburgh, Lake Erie & West Virginia) Ry. 4% Refunding Bonds.....	3,520.00	
†5,000 Twenty-third Street Improvement & Refunding 5% Bonds	4,825.00	23,288.75
Uninvested balance as of December 31, 1916:		
Deposited with Farmers' Loan & Trust Co.....	\$ 2,416.91	
Deposited with Corn Exchange Bank (Bronx).....	499.95	2,916.86
		\$27,050.96
† Purchased during 1916.		

H. R. MITCHELL,
Asst. to Treas.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Tropical Research Fund

Schedule 16.

Unexpended balance as of December 31, 1915..... \$ 5,000.00

RECEIPTS.

Special Subscription:
Andrew Carnegie 1,000.00

\$ 6,000.00

EXPENDITURES.

Salary of directing curator..... \$ 2,303.96
Travelling expenses 1,125.00
Miscellaneous expenses 2,553.47 5,982.43

Unexpended balance as of December 31, 1916..... 17.57

\$ 6,000.00

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Art Gallery Fund

Schedule 17.

RECEIPTS.

Transferred from Income Account.....		\$ 3,770.65
Special Subscriptions:		
Ogden Mills	\$ 250.00	
C. F. Dieterich	250.00	
Henry M. Tilford	250.00	
Cleveland H. Dodge	250.00	
Lispenard Stewart	250.00	
George J. Gould	250.00	
Watson B. Dickerman	250.00	
Mortimer L. Schiff	250.00	
Joseph McAleenan	250.00	
Frank K. Sturgis	250.00	
Percy R. Pyne	250.00	
George F. Baker	250.00	
F. G. Bourne	250.00	
James J. Hill	250.00	
Grant B. Schley	250.00	
Edw. S. Harkness	250.00	
Andrew Carnegie	250.00	4,250.00
		\$ 8,020.65

EXPENDITURES.

Oil paintings	\$ 1,250.00	
Miscellaneous expenses	5.73	1,255.73
Unexpended balance as of December 31, 1916:		
Available for expenditure during 1917.....	\$ 6,264.92	
Received on account of subscriptions paid in advance		
for 1918, 1919	500.00	6,764.92
		\$ 8,020.65

H. R. MITCHELL,
Chief Clerk.
 January 1, 1917.

PERCY R. PYNE,
Treasurer.

Publication Fund

Schedule 18.

RECEIPTS.

Special Subscriptions:

Robert S. Brewster	\$ 1,000.00	
F. A. Schermerhorn	1,000.00	
Edw. S. Harkness	1,000.00	
Cleveland H. Dodge	1,000.00	
Emerson McMillin	1,000.00	
Anthony R. Kuser	1,000.00	\$ 6,000.00

Unexpended balance as of December 31, 1916..... \$ 6,000.00

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

Grads and Horns Building Fund

Schedule 19.

RECEIPTS.

Special Subscription:

Mrs. Frederick Ferris Thompson	\$ 5,000.00	
Unexpended balance as of December 31, 1916.....	\$ 5,000.00	

H. R. MITCHELL,
Chief Clerk.
January 1, 1917.

PERCY R. PYNE,
Treasurer.

MARWICK, MITCHELL, PEAT & CO.

CHARTERED ACCOUNTANTS

27 WALL STREET

NEW YORK

Auditors' Certificate

We have audited the books and accounts of the New York Zoological Society, and of the "Carnegie Pension Fund" for the year ending December 31, 1916, and certify that the foregoing Schedules, "1" to "17," of cash receipts and expenditures are in accordance with the books, and correctly record the transactions relating to the Funds of the Society and the "Carnegie Pension Fund" for the year 1916, and the condition of the various Funds as of December 31, 1916. The subscriptions, donations and dues reported as received and the income from investments, have been properly accounted for, and the securities and cash in bank and on hand at December 31, 1916, as shown in the accounts of the Funds presented herewith, have been duly checked and found in order.

Schedule "3" includes expenditures amounting to \$1,380.33 made through the Park Department of the City of New York which have not been verified by us, but we have incorporated them in the statements submitted, so that these may be complete.

MARWICK, MITCHELL, PEAT & Co.,
Chartered Accountants.

79 Wall Street, New York.
February 23, 1917.

Report of the Auditing Committee
OF THE
NEW YORK ZOOLOGICAL SOCIETY

*To The President and Board of Managers
Of The New York Zoological Society:*

Dear Sirs:—

We beg to report we have examined the annual audit of the books and accounts of the New York Zoological Society for the year ending December 31, 1916, as made by Messrs. Marwick, Mitchell, Peat & Company, Chartered Accountants, and herewith submit the same to you as a complete and satisfactory audit of said books and accounts, including the Carnegie Pension Fund and the Pension Fund Income Account, all expenditures and receipts of the various accounts being clearly set forth, and it appearing that the cash on hand and at the various depositories has been verified and found correct, and all securities in which the funds of the Society are invested have been examined and found as reported.

Expenditures made through the Park Department of the City of New York have not been verified by this audit as such moneys have not passed through the hands of this Society, but are in due course checked and verified by the Comptroller of the City.

Respectfully submitted,

WILLIAM WHITE NILES,
Chairman.

LISPENARD STEWART.
ANTHONY R. KUSER.

List of Accessions, 1916
BY THE ZOOLOGICAL SOCIETY
AT THE ZOOLOGICAL PARK.

BY GIFT

- ADAMS, B. F., Jacksonville, Fla.:
1 Scarlet King Snake, 1 Florida Garter Snake, 1 Chicken Snake, 1 Pygmy Snake. Total, 4 specimens.
- ADAMSON, CHARLES, Ch. Engr. S. S. *Muncaster Castle*, Tompkinsville, S. I.:
Pig-Tailed Monkeys (2 specimens).
- ALLEN, MRS. GEORGE, New York City:
Cotton-headed Marmoset.
- ALLEN, CAPT. G. A., Nyack, N. Y.:
Alligators (2 specimens).
- AUSTIN, E. H., Gaylordsville, Conn.:
1 Holbell's Grebe, 3 Wood Tortoises.
- BALKELAND, G. W., Yonkers, N. Y.:
Red Fox.
- BANKS, MRS. ADELIA, New York City:
Tovi Parakeet.
- BARNES, DANA A., Boston, Mass.:
1 Black Hog-Nosed Snake, 4 Garter Snakes, 2 Water Snakes, 1 Milk Snake.
Total, 8 specimens.
- BEDFORD, H. M., United Fruit Co., New York City:
1 Costa Rica Boa, 3 Central American Boas, 1 Central American Tree Snake.
Total, 5 specimens.
- BEHAN, JAMES J., Otisville, N. Y.:
1 Bull Frog, 1 Horned Owl.
- BELDEN, H., Brooklyn, N. Y.:
Virginia Cardinal.
- BELL, E. LAYTON, Flushing, L. I.:
12 Banded Rattlesnakes, 13 Copperhead Snakes.
- BELL, E. LAYTON, JR., Flushing, L. I.:
Alligators (2 specimens).
- BIGELOW, W. C., New Rochelle, N. Y.:
Hooded Sapaïou Monkey.
- BIRDER, CHARLES, New York City:
Barred Owl.
- BLAKE, CHARLES H., Glenburnie-on-Lake-George, N. Y.:
Pilot Blacksnake.
- BLESSING, ADOLPH, Bolton Landing, N. Y.:
Spotted Salamander.
- BOYS' CLUB, THE, New York City:
Alligator.
- BOURNE, FREDERICK G., Oakdale, L. I.:
Peafowl (2 specimens).
- BROSZ, JOHN F., New York City:
Screech Owl.
- BROWN, MISS SYLVIA E., Dobbs Ferry, N. Y.:
Opossum.
- BRUGGEMAN, MISS ANNA, New York City:
Canary.
- BUCKLEY, MORTIMER, Patrolman 68th Precinct, New York City:
Opossum.

- BUIST, MASTER ALEXANDER, New York City:
 Snapping Turtles (2 specimens).
 CARLIART, LINDEN STEVENS, Brooklyn, N. Y.:
 American Crow.
 CHAFEE, J. G., Langley, S. C.:
 2 Corn Snakes, 1 Hog-Nosed Snake, 1 King Snake, 1 DeKay Snake, 1 Rib-
 bon Snake. Total, 6 specimens.
 CHAPIN, MRS. C. N., New York City:
 Mute Swans (3 specimens).
 CHURCH, A., Newark, N. J.:
 Alligator.
 CLARK, E., JR., Albany, N. Y.: ,
 Opossum.
 CLIFFORD, J. J., Brooklyn, N. Y.:
 Alligators (2 specimens).
 COE, MISS M. S., New York City:
 1 Blue Solitaire, 1 Shassa Thrush, 1 Blacksap, 1 Skylark, 1 Yellow-headed
 Amazon Parrot. Total, 5 specimens.
 COLE, MASTER WATSON C., New York City:
 Chameleon.
 CONNOLLY, MRS. CHARLES E., New York City:
 Wood Thrush.
 CRANDALL, DR. F. A., Zoological Gardens, Buffalo, N. Y.:
 Hudsonian Curlew.
 CROSS, WASHINGTON M., East Orange, N. J.:
 White-faced Sapajou Monkey.
 CRUIKSHANK, DR. OMAR T., Pittsburgh, Pa.:
 Bunch of Salamander Spawn.
 CUTTER, VICTOR M., Limon, Costa Rica:
 Giant Caciques (2 specimens).
 DARDINGKILLER, F. M., Sergeant 2nd Brigade, N. G. N. Y., Brooklyn, N. Y.:
 Alligators (2 specimens).
 DAVIS, MISS ELSIE, New York City:
 White-faced Sapajou Monkey.
 DAVIS, MRS. J. M., Tarrytown, N. Y.:
 Squirrel Monkeys (3 specimens).
 DAY, LEE GARNETT, New York City:
 1 Ocelot, 1 Bay Lynx.
 DAY, CAPT. WILLIAM F., 40th Precinct, New York City:
 Opossum.
 DERBY, G. H., New York City:
 Scarlet Tanager.
 DITMARS, R. L., Scarsdale, N. Y.:
 1 Red Coati Mundi, 1 Hog-nosed Snake.
 DORN, RICHARD, Upper Montclair, N. J.:
 Blue Jays (5 specimens).
 DRENNAN, DR. JENNIE G., Quarantine Station, S. I.:
 Java Monkey.
 DREW SEMINARY FOR YOUNG WOMEN, Carmel, N. Y.:
 Alligator.
 EDWIN, WALTER, New York City:
 Alligator.
 EGGELING, OTTO, New York City:
 Woodchuck.
 EMMERSON, WALTER R., New Rochelle, N. Y.:
 Herring Gull.
 EMPIRE CITY RIFLE AND REVOLVER CLUB, New York City:
 English Ring-neck Pheasant.

- ENGELHARDT, GEORGE P., Brooklyn, N. Y.:
 8 Arizona Tree Toads, 1 Desert Swift.
- EVANS, MISS M. C., New York City:
 Canary.
- FENNO, H. BRADLEE, Boston, Mass.:
 King Snake.
- FERGUSON, MASTER ROBERT, New York City:
 Horned Lizard.
- FORRENGER, A. E., Grantwood, N. J.:
 Green-cheeked Amazon Parrot.
- FREDERICKS, GEORGE, Astoria, L. I.:
 American Robin.
- FREEMAN, H., New York City:
 Skunk.
- FROST, MISS L., New York City:
 Marmosets (2 specimens).
- GILLAM, ARTHUR L., Flushing, L. I.:
 12 Banded Rattlesnakes, 18 Copperhead Snakes, 15 Timber Rattlesnakes, 2
 Southern Green Snakes, 1 Gopher Snake, 1 Chicken Snake, 1 Box
 Turtle. Total, 50 specimens.
- GILMORE, WILLIAM, Brooklyn, N. Y.:
 Black-crowned Night Heron.
- GREENE, P. E. N., Shrewsbury, N. J.:
 Coyote.
- GRIFFITH, DR. F., Belmar, N. J.:
 Hog-nosed Snake.
- GROSS, EUGENE, New York City:
 Saw-Whet Owl.
- GROSSMAN, MASTER FRANK, New York City:
 Alligator.
- HALL, THOMAS G., New Rochelle, N. Y.:
 Black Squirrel.
- HARROLD, ELMER, Leetonia, Ohio:
 Barn Owl.
- HATRICK, MASTER VINCENT, New York City:
 Marmoset.
- HAUPT, H., JR., South Haven, Mich.:
 Hog-nosed Snakes (2 specimens).
- HECHT, A., Larchmont, N. Y.:
 Screech Owl.
- HELD, J., Bronxville, N. Y.:
 Pigeons (18 specimens).
- HILLCREST, OSWALD, New York City:
 Barbary Turtle Dove.
- HILLIARD, J. D., Fort Ann, N. Y.:
 Great Horned Owl.
- HOCHDERFFER, MRS. MARY J., Harbor Haven, L. I.:
 Herring Gull.
- HOETZMAN, WILLIAM, New York City:
 Alligators (2 specimens).
- HORSBRUGH, COL. BOYD R., Oxted, Surrey, England:
 Ring-necked Ducks (2 specimens).
- HOWARD, O. F., New York City:
 Bahama Tree Toads (3 specimens).
- HUBER, MASTER GEORGE, New York City:
 8 Garter Snakes, 49 DeKay Snakes.
- HULL, HERBERT, New York City:
 Tarantula.

- HUMPHREYS, M. V., New York City:
Gray Squirrel.
- HUNTLEY, FRANK C., New York City:
Flying Squirrel.
- ISEHORN, GUSTAV, New York City:
Alligator.
- JOSEPH, ELLIS S., Sydney, N.S.W., Australia:
Great Grey Kangaroo.
- KANST, GEORGE O., New York City:
Virginia Rail.
- KETCHAM, IRVING M., Glen Head, L. I.:
14 Two-lined Salamanders, 3 Marbled Salamanders, 1 Tiger Salamander,
1 Batch Salamander Eggs, 18 Water Newts, 1 Gray Tree Toad, 2 Com-
mon Toads, 4 Cricket Frogs, 2 Wood Frogs, 8 Pickerel Frogs, 1 Painted
Turtle, 1 Canada Porcupine. Total, 55 specimens.
- KINSEL, GEORGE J., West Orange, N. J.:
Water Snake and 45 young.
- KIRK, EDWARD B., Manaos, Brazil:
1 Festive Amazon Parrot, 1 Blue and Yellow Macaw, 1 White-throated Seed-
eater, 1 Woolly Monkey, 1 Spider Monkey, 1 Golden Agouti, 1 Boa
Constrictor. Total, 7 specimens.
- KLEPSTEIN, LESTER, New York City:
Saw-Whet Owl.
- KLIEBERT, J., New York City:
Tovi Parakeets (2 specimens).
- KNOBLE, W., New York City:
American Sparrow Hawk.
- KNORR, MISS EMMA, New York City:
Blue-Fronted Amazon Parrot.
- KOCH, MISS E., New York City:
Canary.
- KUSER, COL. ANTHONY R., Bernardsville, N. J.:
68 Golden Pheasants, 60 Silver Pheasants, 13 Lady Amherst Pheasants, 10
Ring-neck Pheasants, 4 Black-Breasted Pheasants, 4 Lineated Pheas-
ants, 2 Black-crested Pheasants, 6 Black-throated Pheasants, 1 Cheer
Pheasant, 1 Swinhoe Pheasant, 1 Eared Pheasant, 2 Elliot Pheasants,
2 Horsfield Pheasants, 1 Mongolian Pheasant, 1 Impeyan-Silver Pheas-
ant Hybrid, 4 Swinhoe-Silver Pheasant Hybrids, 1 Pheasant-Fowl Hy-
brid, 1 Ceylon Jungle Fowl-Domestic Fowl Hybrid, 36 Hybrid Ring-
neck Pheasants, 2 Victoria Crowned Pigeons, 1 Nicobar Pigeon, 1 Blue
and Yellow Macaw, 20 Mallard Ducks, 1 Paradise Sheldrake, 2 Ruddy
Sheldrakes, 1 Pintail Duck, 1 Whistling Swan, 1 Whooping Swan, 2
European Brant, 1 Lesser Snow Goose, 1 Ross Goose, 1 Wood-Mallard
Hybrid. Total, 253 specimens.
- LADENBURG, MISS E. M., Westbury, L. I.:
Grizzly Bear Cub.
- LARSON, MISS ESTHER, Hoboken, N. J.:
South American Parakeets (2 specimens).
- LEWIS, HENRY W., Nashville, Tenn.:
Red-shouldered Hawk.
- LINDBROTH, MASTER GEORGE, New York City:
Alligators (2 specimens).
- LIPTROTT, R. P., Brooklyn, N. Y.:
White-faced Sapajou Monkey.
- LISCHKE, MASTERS G. and H., New York City:
8 Garter Snakes, 49 DeKay Snakes.
- MCGILL, DR. W. H., New York City:
Alligators (2 specimens).

- McKEAN, M., New York City:
Marmoset.
- McPHAIL, G. A., New York City:
Yellow-Fronted Amazon.
- MAEGELSH, JOE, New York City:
3 Central American Boas, 1 Flat-Headed Tree Snake.
- MARCKIES, GEORGE M., Sharon, Conn.:
Horned Grebe.
- MENCHEN, THEODORE, Woodhaven, L. I.:
Black Snakes (3 specimens).
- MILLER, MASTER JACOB, New York City:
Alligator.
- MILLWARD, RUSSELL HASTINGS, New York City:
1 Jaguar, 1 White-nosed Coati Mundi.
- MINER, DR. F. C., New York City:
Green-checked Amazon Parrot.
- MONTAGUE, E., Hyndsville, N. Y.:
Swainson Hawk.
- MONTROSE, MASTER ELLSWORTH, New York City:
Opossum.
- MOORE, MRS. JONATHAN, Bronxville, N. Y.:
Alligator.
- MOSIRE, C. A., Lemon City, La.:
2 Diamond-back Rattlesnakes, 1 Water Moccasin.
- MYER, J. W., New York City:
Tovi Parakeets (3 specimens).
- MYERS, MRS. F., New York City:
Yellow-shouldered Amazon Parrot.
- NEVILE, P. J., Somerville, N. J.:
Red-shouldered Hawk.
- N. Y. AQUARIUM, New York City:
1 Iguana, 1 Alligator.
- N. Y. STATE CONSERVATION COMMISSION, Albany, N. Y.:
English Ring-neck Pheasants (6 specimens).
- NORRIS, MRS. LEWIS R., New York City:
Scarlet Tanager.
- NYGAARD, I. O., New York City:
Green Monkey.
- OERTEL, DR. THEODORE EUGENE, Augusta, Ga.:
Coral Snake.
- OLSEN, L., New York City:
Sew-Whet Owl.
- OLSEN, O. L., Boonsboro, Md.:
Ring-neck Snake.
- OLSEN, FRED, New York City:
Snapping Turtle.
- PAGE, MRS. EDWARD A., New York City:
12 Undulated Grass Parakeets, 5 Yellow Parakeets.
- PAINTER, KENYON V., Cleveland, Ohio:
Spot-billed Toucanet.
- PARKER, FOSTER, Cayuga, N. Y.:
Blue-Wing Teal.
- PARKER, WALTER E., Chicago, Ill.:
Texas Rattlesnake.
- PAUL, J. J., Watertown, Fla.:
1 Pair Skunks, 1 Northern Fox Squirrel, 1 Southern Fox Squirrel. Total,
4 specimens.
- PAULL, J. F., JR., Wheeling, W. Va.:
1 Great Horned Owl, 1 Cooper's Hawk.

- PAULSEN, N. F., New York City:
Kinkajou.
- PENDLETON, C. V., Norwich, Conn.:
2 Hog-nosed Snakes, 1 Alligator, 2 Spotted Turtles. Total, 5 specimens.
- PETERS, WILLIAM, New York City:
Olive-backed Thrush.
- PHILADELPHIA ZOOLOGICAL GARDENS, through R. D. Carson, Supt., Philadelphia, Pa.:
Coypu Rats (3 specimens).
- POLICE PRECINCT No. 63, New York City:
Raccoon.
- POLLOCK, G. FREEMAN, Skyland, Va.:
5 Timber Rattlesnakes, 6 Copperhead Snakes.
- PULITZER, RALPH, New York City:
Canada Lynx.
- PURCELL, MRS. F. M., New York City:
Gray Java Sparrow.
- PYRORER, WILLIAM, New York City:
White-faced Sapajou Monkey.
- QUANDT, PAUL, New York City:
Bull Snake.
- QUICK, CHESTER G., Spuyten Duyvil, N. Y.:
Opossum.
- RADLEY, WILLIAM P., New York City:
Alligator.
- REED, S. K., New York City:
Red-shouldered Hawks (2 specimens).
- REGAN, EMMETT, New York City:
Roseate Cockatoo.
- RENEKER, C. P., New York City:
Flying Squirrels (3 specimens).
- REYNOLDS, MRS. H. L., New York City:
Mute Swans (2 specimens).
- ROBERT, MADAME BERTHE, New York City:
Rhesus Monkey.
- ROBINSON BROS., San Francisco, Calif.:
Red Entellus Monkey.
- ROMANOFF, PETER, New York City:
Red-shouldered Hawks (2 specimens).
- ROSE, MRS., New York City:
Alligator.
- ROSENBERG BROS., New York City:
Pair Red Foxes.
- ROSSBERG, KURT, New York City:
Fish Crow.
- ROWLAND, G. T., Mt. Vernon, N. Y.:
Opossum.
- SAGEMAN, MRS. JOHN, Brooklyn, N. Y.:
Virginia Rail.
- SANDBACH, C., New York City:
1 Java Sparrow, 1 Cut-throat Finch, 2 Troupials, 2 Moriche Orioles. Total, 6 specimens.
- SCHACHT, F. H., Jersey City, N. J.:
2 Colonies of Bees, Beehives and fittings for same.
- SCHADT, MASTER HENRY, New York City:
Flying Squirrel.
- SCHAEFER, L. J., Corona, L. I.:
Central American Boa.

- SCHLECHTA, J. J., Patchogue, L. I.:
Woolly Monkey.
- SCHNEIDER, H. G., New York City:
American Sparrow Hawk.
- SCHULMAN, MASTER MAX, New York City:
Wood Tortoise.
- SEIFORD, MRS. L., Grantwood, N. J.:
Alligator.
- SHELDON, CHARLES, New York City:
Horned Lizards (3 specimens).
- SHIELD, F. K., Kamp Kiametha, N. J.:
American Sparrow Hawks (4 specimens).
- SHOEMAKER, HENRY W., McElhattan, Pa.:
1 Bald Eagle, 2 Bay Lynxes.
- SLOCUM, J. J., New York City:
Amazon Parrot.
- SMITH, HOWARD C., JR., New York City:
1 Gray Squirrel, 1 Alligator.
- SNAKE KING, W. A., Brownsville, Texas:
1 Mexican Boa, 1 Mexican Rattlesnake, 1 Mexican Skink. Total, 3 specimens.
- SPECK, DR. F. G., Philadelphia, Pa.:
1 Desert Tortoise, 1 Red Salamander, 2 Pickering Tree Toads, 2 Slimy Salamanders, 2 Spotted Salamanders, 1 Southern Tree Frog, 1 Jumping Mouse. Total, 10 specimens.
- SPENCE'S SCHOOL, MISS, New York City:
2 European Bullfinches, 1 European Goldfinch, 1 European Siskin, 1 White-headed Manniken, 2 Long-tailed Grassfinches, 3 Melodious Grassquits, 1 Saffron Finch. Total, 11 specimens.
- STEIL, GEORGE H., New York City:
Alligator.
- STREETER, CORPORAL D. D., McAllen, Texas:
Berlandier's Tortoise.
- STUTSMAN, FRANK V., Twin Lakes, Pa.:
1 Timber Rattlesnake, 1 Storer's Snake.
- SUMNER, MRS. GRAHAM, Englewood, N. J.:
Roseate Cockatoo.
- SUTCLIFFE, ROBERT, Douglas, Ariz.:
Horned Lizards (9 specimens).
- SWITZER, J. E., Ardsley-on-the-Hudson, N. Y.:
Green-Winged Macaw.
- TAMBERVILLE, MR., New York City:
Raccoon.
- TARBOX, MISS CORA I., Essex, Vt.:
American Robins (2 specimens).
- TAYLOR, W. BELL, Lima, Peru:
Woolly Monkey.
- TELFORD, A. W., Wassaic, N. Y.:
American Sparrow Hawk.
- TEREIRA, MRS. L. J., New York City:
Tropical.
- TER MARSCH, CAPT. K. J., S. S. Medan, Brooklyn, N. Y.:
1 Siamang, 1 Chevrotain.
- THOMAS, MISS CHRISTINE, Brooklyn, N. Y.:
1 South American Boa, 1 Alligator.
- THOMPSON, MASTER HARRY, New York City:
Milk Snake.
- TIERNAN, JOHN, New York City:
Alligators (9 specimens).

- VAN BENSCHOTEN, B. L., White Plains, N. Y.:
1 English Rink-neck Pheasant, 1 Golden Pheasant.
- VON BULHREN, GEORGE, New York City:
Ribbon Snakes (2 specimens).
- VON DEESTEN, Miss FLORENCE, Hoboken, N. J.:
Horned Toad.
- WAGSTAFF, Mrs. DAVID, Tuxedo Park, N. Y.:
Kinkajou.
- WATSON, R. C., New York City:
Alligator.
- WATTEL, JULES A., New York City:
1 Corn Snake, 1 King Snake.
- WATTEL, LOUIS, New York City:
Sun Bittern.
- WEIDL, A., New York City:
Sapajou Monkey.
- WEINBERG, F., Los Angeles, Calif.:
4 Greater Jerboas, 1 Pair Ring-tailed Cats, 2 Western Cotton-tail Rabbits,
4 German Dormice, 6 Kangaroo Mice, 3 Cyclodes. Total, 21 specimens.
- WEITZEL, CHARLES, New York City:
Alligators (2 specimens).
- WENZEL, EDWARD, New York City:
1 Milk Snake, 1 Box Turtle.
- WESTMAN, GEORGE E., Bishop's Crossing, Quebec, Canada:
Great Horned Owl.
- WHARTON, THEODORE W., Ithaca, N. Y.:
Marmoset.
- WHITE, Mrs. A. C., New York City:
Zebra Finch.
- WHITE, Mrs. STANFORD, St. James, L. I.:
Snapping Turtle.
- WILLIAMS, J. WARNER, Tampa, Fla.:
Alligator.
- WILLIAMSON, W. R., Tuckahoe, N. Y.:
Alligator.
- WILSON, F. M., New Rochelle, N. Y.:
Screech Owl.
- WILSON, Mrs. M., New York City:
Chameleon.
- WINCHERMAN, W. S., New York City:
Sphinx Baboon.
- WOLVERTON, SAMUEL, Scarsdale, N. Y.:
White Runt Pigeon.
- WUEST, HENRY, New York City:
Horned Toad.

Plants

BY GIFT.

- BALCOM, Mrs. I., New York City:
Rubber Plant.

National Collection of Heads and Horns

BY GIFT

- ABERCROMBIE, DAVID T., New York City:
Panama White-tailed Deer (*Odocoileus rothschildi*). Antlers.
- APPLETON, COL. H., Victoria, British Columbia:
Tian Shan Wapiti (*Cervus canadensis asiaticus*). Antlers.

BROWER, CHARLES D., Barrow, Alaska:

Musk-Ox Skull and Horns. Mammoth Molar Tooth. Mastodon Molar Tooth.

GRANT, MADISON, New York City:

Columbian Mountain Goat (*Oreamnos montanus columbianus*). Mounted Head.

HARRISON, HON. FRANCIS BURTON, Manila, P. I.:

Luzon Sambar Deer (*Cervus philippinus*). Two pairs of Antlers. Philippine Carabao (*Bos bubalis*). Pair of Mounted Heads.

MACDOUGAL, DR. DANIEL T., Tucson, Ariz.:

California Mule Deer (*Odocoileus hemionus californicus*). Antlers.

BY PURCHASE.

Irish Elk (*Megaceros hibernicus*). Antlers.

Library

AMERICAN GAME PROTECTIVE AND PROPAGATION ASSOCIATION, New York City:

American Pheasant Breeding and Shooting, by E. A. Quarles.

BRITISH MUSEUM OF NATURAL HISTORY, The Trustees of the, London, England:

Fresh Water Fishes of Africa. Vol. III. Ungulate Mammals in the British Museum of Natural History. Guide to the Fossil Remains of Man.

FORBUSH, E. H., Boston, Mass.:

Report of Mass. State Board of Agriculture on the Gypsy Moth. 8 Annual Reports of the State Ornithologist. 13 Separate Papers on Bird Protection.

GRANT, MADISON, New York City:

The Country of the Dwarfs, by Paul du Chaillu. My Apingi Kingdom, by Paul du Chaillu. Lost in the Jungle, by Paul du Chaillu. Wild Life Under the Equator, by Paul du Chaillu. Stories of the Gorilla Country, by Paul du Chaillu. The Man Among the Monkeys, by Polydorus Marasquin. Martin's Natural History. Merry's Museum. Curiosities of Entomology.

OFFICE NATIONAL DES UNIVERSITES ET ECOLES FRANCAISES, Paris, France:

La Science Francaise. Vols. I and II.

AT THE AQUARIUM

BY PURCHASE.

During the year 2,652 specimens were purchased by the New York Zoological Society, as follows:

Fourteen Muttonfishes, 1 Sandfish, 8 Sea Catfishes, 19 Grass Porgies, 4 Graysby, 35 Blue-striped Grunts, 28 Gray Snappers, 6 Red Groupers, 9 Nassau Groupers, 1 Brown Moray, 5 Spotted Morays, 1 Green Moray, 15 Spadefishes, 11 Salema, 81 Blue Heads, 81 Iridios, 9 Dog Snappers, 4 Yellow Tails, 1 Ocean Triggerfish, 3 Nurse Sharks, 1 Squirrelfish, 1 Batfish, 8 Margates, 1 Barracuda, 4 Silver Gars, 4 Silver Moonfishes, 1 Neverbite, 176 Beau Gregories, 92 Blue Angelfishes, 1 Queen Angelfish, 81 Black Angelfishes, 2 French Angelfishes, 69 Slippery Dicks, 2 Red Parrotfishes, 62 Rainbow Parrotfishes, 15 Blue Parrotfishes, 3 Mud Parrotfishes, 2 Grunts, 62 White Grunts, 4 Gray Grunts, 75 Yellow Grunts, 9 Bronze Grunts, 10 Leatherfishes, 42 Black-tailed Grunts, 67 Tom Tates, 114 Porkfishes, 36 Spot Snappers, 13 Schoolmasters, 1 Sand Grouper, 2 Anglers, 3 Flounders, 1 Rockfish, 7 Littlehead Porgies, 6 Jewfishes, 4 Scamp, 144 Spiny Boxfishes, 1 Mackerel, 24 Sergeant Majors, 15 Rock Hinds, 1 Marbled

Hamlet, 2 Four Eyes, 6 Southern Puffers, 1 Queen Triggerfish, 2 Pilotfishes, 9 Red Hogfishes, 15 Cowfishes, 5 Surgeonfishes, 1 Blue Tang, 12 Common Triggerfishes, 2 Amberfishes, 2 Octopi, 7 Pinfishes, 7 Black Groupers, 1 Brown Gregory, 4 Butterflyfishes, 6 Scorpionfishes, 6 Buffalo Trunkfishes, 1 Trunkfish, 5 Chubbs, 2 Red Hinds, 9 Jolthead Porgies, 1 Sharp-nosed Puffer, 15 Codfishes, 2 Pompano, 1 Broad Shad, 9 Pike Perch, 2 Sunfishes, 10 Catfishes, 8 Suckers, 6 Small-mouthed Black Bass, 14 Yellow Perch, 6 Sharp-nosed Sturgeon, 1 Lumpfish, 1 Blue Shark, 1 Blunt-nosed Shark, 1 Brown Shark, 13 Sea Horses, 2 Sand Sharks, 10 Yellow Mackerel, 9 Crevalle, 4 Blackfishes, 1 Sting Ray, 1 Eagle Ray, 4 Orange Filefishes, 63 Smooth Dogfishes, 2 Spined Dogfishes, 23 Shark Suckers, 52 Eels, 46 Croakers, 4 Striped Bass, 123 Red-winged Sea Robins, 68 Weakfishes, 2 Puffers, 23 Bluefishes, 41 Menhaden, 30 Prickly Skates, 9 Barn-door Skates, 8 Flukes, 33 Spots, 1 Rabbitfish, 26 Hakes, 7 Slimy Toadfishes, 3 Hammerhead Sharks, 7 Lebias, 1 Killyfish, 1 Manatee, 12 Hellbenders, 25 Mud-puppies, 5 Conchs, 4 Painted Turtles, 1 Troost's Terrapin, 12 Yellow-bellied Slider Terrapin, 10 Cumberland Terrapin, 14 Side-necked Turtles, 1 Mata Mata Turtle, 2 Hawksbill Turtles, 1 Wood Turtle, 1 Cubbyu, 1 Riddlings Turtle, 9 Soft Shelled Turtles, 2 Loggerhead Turtles, 1 Green Turtle, 21 Stone Crabs, 9 Hermit Crabs, 30 Blue Crabs, 9 Spider Crabs, 75 Land Crabs, 38 Land Hermit Crabs, 3 Red Hermit Crabs, 3 Box Crabs, 44 Spiny Lobsters, 12 Lobsters, 1 Giant Lobster, 2 Locust Lobsters, 1 Pelican.

BY GIFT.

In the same period 369 specimens were donated to the New York Zoological Society, as follows:

One Rabbitfish, 2 Sea Horses, 2 Muttonfishes, 1 Dogfish, 24 Rainbow Trout, 31 Brook Trout, 1 Lamprey Eel, 1 Goldfish, 1 Deepsea Shark, 1 *Peristedion miniatum*, 20 Scallops, 79 Mussels, 44 Alligators, 5 Green Turtles, 21 Painted Turtles, 1 Yellow-bellied Slider Terrapin, 5 Box Turtles, 1 Diamond-backed Terrapin, 1 Florida Terrapin, 1 Muhlenberg Turtle, 1 Gopher, 1 Cumberland Terrapin, 2 Lobsters, 20 Crayfishes, 3 Mantis Shrimp, 12 Side-necked Turtles, 1 Centipede, 4 Leopard Frogs, 7 Bull Frogs, 15 Snapping Turtles, 8 Spotted Turtles, 4 Land Hermit Crabs, 31 Orchid Crabs, 1 Chameleon, 1 Water Snake, 10 Newts, 5 Porpoises.

The total of 3,021 specimens were received during the year by purchase and donation.

BY EXCHANGE.

DETROIT AQUARIUM, Belle Isle, Detroit, Michigan:

10 Common Suckers, 5 Red-horse Suckers, 5 Pike Perch, 25 Sheepshead, 26 Rock Bass, 25 Bullheads, 5 Burbot, 5 Pike, 11 Gar Pike, 19 Pickerel, 3 Spotted Catfishes, 3 Stone Catfishes, 1 Chubb Sucker, 1 Mud Fish, 1 Muskalunge.

SIMPSON, Mr. D. A., New York City:

2 sea horses and 6 Soft-shelled Turtles.

UNITY HATCHERY, Copake, N. Y. (Through Mr. E. C. Brown).

10 Pickerel.

The Aquarium Library

BY GIFT.

AMERICAN MUSEUM OF NATURAL HISTORY, New York City:
Annual Report and Journal.

- BROOKLYN INSTITUTE OF ARTS AND SCIENCES, Brooklyn, N. Y.:
Annual Report, Museum News and Quarterly.
- CARNEGIE INSTITUTION OF WASHINGTON, Washington, D. C.:
Special Papers.
- CHILDREN'S MUSEUM, Bedford Park, Brooklyn, N. Y.:
Bulletin for 1916.
- JENNINGS, MR. G. E., New York City:
"Fishing Gazette."
- NATIONAL MUSEUM, Washington, D. C.:
Bulletin for 1916.
- SMITHSONIAN INSTITUTION, Washington, D. C.:
Special Papers for 1916.
- U. S. BUREAU OF FISHERIES, Washington, D. C.:
Report and Bulletins for 1916.
- WINGATE, MR. HAROLD, New York City:
Proceedings of the Philadelphia Academy of Natural Sciences.

CHARTER
OF THE
NEW YORK ZOOLOGICAL SOCIETY

CHAPTER 435, LAWS OF 1895.

AN ACT to incorporate the New York Zoological Society and to provide for the establishment of a zoological garden in the city of New York.

As amended by Chapter 146 of the Laws of 1902; and by Chapter 240 of the Laws of 1910.

See Chapter 432 of the Laws of 1900.

See Chapter of the city of New York, Section 626 of the Laws of 1901.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Charles A. Dana, Oswald Ottendorfer, Andrew H. Green, William H. Webb, Henry H. Cook, Samuel D. Babcock, Charles R. Miller, George G. Haven, J. Hampden Robb, Frederick W. DeVoe, J. Seaver Page, Rush C. Hawkins, David James King, Wager Swayne, Charles A. Peabody, Jr., Charles E. Whitehead, Charles R. Flint, Samuel Parsons, Jr., Mornay Williams, Henry E. Gregory, Isaac W. Maclay, Isaac Rosenwald, Hugh N. Camp, Andrew D. Parker, Cornelius Van Cott, William F. Havemeyer, Frederick Shonnard, William W. Thompson, Alexander Hadden, Edward L. Owen, John H. Starin, Rush S. Huidekoper, William W. Goodrich, Albert H. Gallatin, Frederick S. Church, Edward C. Spitzka, Robert L. Niles, Madison Grant, C. Grant La Farge, William Van Valkenburg, and such other persons as may, under the provisions of its by-laws, become members of the corporation hereby created, are hereby created a body corporate and politic, by and under the name of the New York Zoological Society.

SEC. 2. Said corporation shall have power to establish, maintain and control zoological parks, gardens, or other collections for the promotion of zoology and kindred subjects, and for the instruction and recreation of the people. Said corporation may collect, hold, and expend funds for zoological research and publication, for the protection of wild animal life, and for kindred purposes, and may promote, form, and co-operate with other associations with similar purposes, and may purchase, sell, or exchange animals, plants, and specimens appropriate to the objects for which it was created.

SEC. 3. The managers of said corporation shall have power to make and adopt by-laws for the management and government of its affairs and business, for the admission, suspension, and expulsion of its members, and for the terms and conditions of membership; to prescribe the number and mode of election of its officers; to define their duties; to provide for the safe-keeping of its property, and from time to time to alter and modify its By-laws.

SEC. 4. The affairs and business of said corporation shall be managed and controlled by a board of managers, the number of whom shall be prescribed by the by-laws. The first board of managers shall be divided by lot into three classes, equal in number, one of which classes shall hold office for one year, another for two years, and the other for three years; and all persons elected to be managers at any subsequent election shall hold office for three years, and until others are elected in their stead. There shall be a president, two vice-presidents, treasurer and secretary, to be elected by the board of managers annually, who shall hold office until others are elected in their stead. The first meeting under

this act may be held at any time upon a notice of five days, signed by any five of the incorporators named in the first section of this act, fixing a time and place for such meeting, a copy whereof shall be mailed to each of said incorporators at his usual post-office address, and twelve of such incorporators shall be a quorum for the purpose of organization, adoption of by-laws, and election of officers. No manager of said corporation shall be interested, directly or indirectly, in any contract concerning its property or affairs.

SEC. 5. Said corporation may raise money by the issue of bonds, secured by a mortgage on any or all of its property not acquired from said city or state.

SEC. 6. Said corporation may take, purchase, and hold real and personal estate necessary for the purpose of its incorporation, and shall possess the general powers and be subject to the restrictions and liabilities prescribed in Article II of Chapter 23 of the Consolidated Laws, entitled "General Corporation Law," being chapter 28 of the Laws of 1909.

SEC. 7. The commissioners of the sinking fund of the said city are authorized in their discretion to allot, set apart, and appropriate for the use of said corporation, any of the lands belonging to said city north of One Hundred and Fifty-fifth street, but not in the Central Park, and such appropriation may be revoked if, after the expiration of five years from the passage of the act, a zoological garden is not established thereon; said grounds thus set apart and appropriated shall be used for no purpose whatsoever except those aforesaid. As soon as any lands are set apart the Mayor of the said city of New York, and the President of the Department of Parks of said city, shall become and be *ex-officio* members of the board of managers of said corporation. If at any time the animals now composing the menagerie at Central Park shall be removed therefrom by the authorities having charge thereof, said authorities may make an arrangement with the incorporators named in this act or the corporation formed by them for leasing or sale of such animals to such incorporators or corporation, and said incorporators or corporation shall have a preference over any other person or corporation in respect thereto upon the same terms which said authorities could make with any such other person or corporation, or upon such other terms as to such authorities may seem proper, but nothing herein provided shall be construed as giving the commissioners of the Department of Public Parks authority to sell, lease, transfer, or in any other wise dispose of said animals or other property connected with or belonging to said menagerie.

SEC. 8. Admission to the said gardens shall be free to the public for at least four days, one of which shall be Sunday, in each week, subject to such rules and regulations as shall be prescribed by said corporation.

SEC. 9. This act shall take effect immediately.

NEW YORK ZOOLOGICAL SOCIETY

AND THE

NEW YORK AQUARIUM

CHAPTER 441, LAWS OF 1902.

AN ACT to authorize a further appropriation to the New York Zoological Society for the support of the New York Aquarium.

As amended by Chapter 239 of the Laws of 1910.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Chapter four hundred and forty-one of the laws of nineteen hundred and two, entitled "An act to authorize a further appropriation to the New York Zoological Society for the support of the New York Aquarium," is hereby amended to read as follows:

SECTION 1. The Board of Estimate and Apportionment of the City of New York may annually, in its discretion, include in the budget for the then next ensuing financial year, in addition to any sum or sums which may be appropriated for the adequate support and maintenance of the New York Zoological Park or gardens, situated in the borough of the Bronx, and administered and controlled by the New York Zoological Society, a further sum or sums, in its discretion, for the use of the said New York Zoological Society, provided, however, that the additional appropriation hereby authorized shall be made only in case an agreement is entered into between the said New York Zoological Society and the City of New York, acting by its Board of Estimate and Apportionment for the adequate keeping, maintenance, extension, preservation and exhibition of the building and approaches thereto and collection of aquatic animals and plants contained therein, known as the New York Aquarium, situated in the Battery park in the Borough of Manhattan in said city, and also for furnishing opportunities for study, research and publication in connection with said collections, which contract the said Board of Estimate and Apportionment is hereby expressly authorized, in its discretion, to make upon such terms and conditions as may be agreed upon with the said New York Zoological Society, and which contract shall also provide how the duty of the commissioner of parks for the borough of Manhattan and Richmond in respect to maintaining the said aquarium now imposed upon him by law shall be performed.

SEC. 2. This act shall take effect immediately.

BY-LAWS
OF THE
NEW YORK ZOOLOGICAL SOCIETY

AMENDED TO JANUARY 21, 1914.

ARTICLE I.

MEETINGS OF THE SOCIETY.

SECTION 1. The office and place of business of the New York Zoological Society shall be in the City of New York, unless otherwise ordered.

SEC. 2. The Society shall hold its annual meeting for the election of Managers, and other business, on the second Tuesday of January, or such day thereafter during the month of January to which said annual meeting shall adjourn.

SEC. 3. Special meetings of the Society shall be called by the Secretary, upon the request of the President or the Chairman of the Executive Committee, or at the written request of ten members.

SEC. 4. Notices of all meetings shall be mailed to each member of the Society at least three days before such meeting.

SEC. 5. At meetings of the Society twenty members shall constitute a quorum.

SEC. 6. The order of business shall be as follows:

1. Roll Call.
2. Reading of minutes not previously read.
3. Report of Executive Committee.
4. Report of Secretary.
5. Report of Treasurer.
6. Report of the Director of the Zoological Park.
7. Report of Director of the Aquarium.
8. Election of Managers.
9. Communications.
10. Miscellaneous business.
11. Reports and resolutions.

ARTICLE II.

BOARD OF MANAGERS.

SEC. 1. The Board of Managers shall consist of thirty-six members, together with the Mayor of New York and President of the Park Board, or Commissioner for the Bronx, who shall be members *ex-officio* of the Board.

SEC. 2. Nineteen Managers shall constitute a quorum, but ten Managers may transact current business, and adjourn, subject to the subsequent approval of a meeting at which a quorum shall be present.

SEC. 3. The Board of Managers shall hold an annual meeting on the third Tuesday of January, or on such day thereafter to which said annual meeting shall adjourn. Regular meetings of the Board may also be called by the Secretary on the third Tuesdays of October and April upon the request of the President or Chairman of the Executive Committee. Special meetings of the Board shall be called at any time by the Secretary upon the request of the President or Chairman of the Executive Committee, or at the written request of five Managers.

SEC. 4. Notices of meetings of the board shall be mailed to each Manager at least three days before such meetings.

SEC. 5. The successors to the outgoing class of Managers shall be elected by the Society at its annual meeting, but vacancies in the board may be filled for the unexpired term by the Board of Managers, or by the Executive Committee.

SEC. 6. A Nominating Committee shall be annually appointed by the Executive Committee, and shall consist of three members of the Society at large, who shall nominate and post ten days before the annual election the names of twelve persons to succeed the outgoing class of Managers in a conspicuous place in the office of the Society.

SEC. 7. No person shall be eligible for the election of the Board of Managers, except to fill vacancies, unless his name shall have been posted as a candidate by such committee, or by not less than ten members, in writing, in a conspicuous place in the office of the Society ten days before the annual election. All candidates for election as Managers must be Life Members, Patrons, Associate Founders, or Founders of the Society.

SEC. 8. Any Manager who shall fail to attend three consecutive meetings of the Board, unless excused by a vote of the Board, shall cease to be a Manager.

SEC. 9. The Board of Managers shall at its annual meeting elect a President, two Vice-Presidents, a Secretary, and Treasurer, who shall hold office for one year, or until their successors are elected. The President, Vice-Presidents, and Treasurer shall be members of the Board.

SEC. 10. The Director of the Zoological Park, the Director of the Aquarium, and all other persons employed by the Society, shall be appointed by the Board or by the Executive Committee, and shall hold office during the pleasure of the Board.

SEC. 11. The Board shall, at its annual meeting, elect an Executive Committee and Auditing Committee, which shall hold office for one year, or until their successors are elected. The Board of Managers and the Executive Committee shall also have authority to appoint such other Committees or officers as they may at any time deem desirable, and to delegate to them such powers as may be necessary.

SEC. 12. The order of business of the meetings of the Board shall be as follows:

1. Roll Call.
2. Reading of minutes not previously read.
3. Report of Executive Committee.
4. Report of Secretary.
5. Report of Treasurer.
6. Report of Auditing Committee.
7. Report of Director of Zoological Park.
8. Report of the Director of the Aquarium.
9. Election of Officers.

10. Election of Committees.
11. Election of new members.
12. Communications.
13. Miscellaneous business.

SEC. 13. All reports and resolutions shall be in writing, and the ayes and nays may be called on any resolution at the request of one Manager.

SEC. 14. Whenever the funds of the Society shall permit, the Board of Managers or the Executive Committee may award medals or other prizes for meritorious work connected with the objects of the Society.

ARTICLE III.

OFFICERS.

SEC. 1. The officers of the Society shall consist of a President, two Vice-Presidents, a Treasurer, a Secretary, and a Director of the Zoological Park. These officers, with the exception of the Director, shall be elected at the annual meeting of the Board of Managers, but any vacancy may be filled for an unexpired term by the Board of Managers, or by the Executive Committee, until the next annual election.

SEC. 2. The President shall preside at all meetings of the Board and of the Society, and shall be *ex-officio* a member of the Executive and Auditing Committees.

SEC. 3. The Vice-Presidents shall, in the absence of the President, perform his duties and possess his powers, acting in the order of their election.

SEC. 4. The Treasurer shall receive, collect and hold, subject to the order of the Board of Managers, or the Executive Committee, all dues, subscriptions, warrants from the City, fees and securities. He shall pay all bills as ordered by the Board of Managers or the Executive Committee, and shall report to the Society at its annual meeting, and to the Board of Managers at all regular meetings, and to the Executive Committee at each meeting. He shall keep all moneys and securities in some bank or trust company to be approved by the Board of Managers or Executive Committee. The books of the Society shall at all times be open to the inspection of the Managers.

SEC. 5. The Secretary shall be a salaried officer of the Society. He shall be present, unless otherwise relieved by the Board or Executive Committee, at all meetings of the Society, of the Board and of the Standing Committees. He shall keep a careful record of all proceedings, shall have the custody of the seal, archives and books, other than books of account, and shall conduct the correspondence of the Society. He shall issue all notices and tickets, and shall perform such other duties as the Board may direct. He shall be a member *ex-officio* of the Executive, Aquarium, and Auditing Committees, and of the Scientific Council.

SEC. 6. The Director of the Zoological Park shall be elected annually by the Executive Committee at a salary to be determined by said Committee, and shall hold office until removed or his successor chosen by said Committee. He shall be the responsible administrative officer of the Park, and shall recommend to the Executive Committee candidates for the various positions in the Park. He shall also perform all such other duties in connection with the business, scientific, and literary administration of the Society as may be assigned to him by the Executive Committee.

SEC. 7. The Director of the Aquarium shall be elected annually by the Executive Committee and shall hold office until removed or his successor is chosen by said Committee. He shall be the responsible administrative officer of the Aquarium, and shall recommend to the Executive Committee all candidates for positions in the Aquarium. The director of the Aquarium shall be *ex-officio* a member and Chairman of the Aquarium Committee. He shall perform such other duties in connection with the Aquarium as may be assigned to him by the Executive Committee.

ARTICLE IV.

COMMITTEES.

SEC. 1. There shall be two standing committees, the Executive Committee and the Auditing Committee, which shall hold office for one year or until their successors are elected.

SEC. 2. The Executive Committee shall consist of seven Managers, together with the President and Secretary of the Society *ex-officio*. Four members shall constitute a quorum, and all meetings shall be called by the Chairman. The Executive Committee shall fill all vacancies in its own number and shall have the full powers of the Board of Managers, except so far as such delegation of power may be contrary to law.

SEC. 3. The Executive Committee shall have the control and regulation of the collections, library, and all other property of the Society, and shall have power to purchase, sell, and exchange specimens and books, to employ and control all officials and employees of the Society, Park, and Aquarium, and generally to carry out in detail the directions of the Board of Managers and the terms of any contract between the City, or Park Board, and the Society.

SEC. 4. All the rules and regulations for the examination of applicants for the various positions in the Park and Aquarium shall be made or approved by the Executive Committee.

SEC. 5. The Executive Committee may regulate the auditing and payment for all current accounts.

SEC. 6. The Executive Committee shall annually appoint an Aquarium Committee, whose duties and powers are set forth in Section II of Article IV of these By-Laws.

SEC. 7. The Executive Committee shall annually appoint a Nominating Committee, whose duties and powers are set forth in Sections 6 and 7, Article II, of these By-Laws.

SEC. 8. It shall also appoint a Scientific Council, whose powers and duties are set forth in Section 2 of Article V of these By-Laws.

SEC. 9. The Committee shall make a written report at each regular meeting of the Board of Managers.

SEC. 10. The Auditing Committee shall consist of three regular members of the Society, in addition to the President and Secretary, members *ex-officio*, and vacancies shall be filled by the Executive Committee. It shall be the duty of the Auditing Committee to audit, annually, the accounts of the Treasurer, of the Director of the Zoological Park, and of the Director of the Aquarium, and any other accounts of the Society, and shall report to the Board of Managers at its annual meeting.

SEC. 11. The Executive Committee shall annually appoint an Aquarium Committee, not to exceed eight members of this Society, who shall hold office until

their successors are chosen. All vacancies shall be filled by the Executive Committee. The Director of the Aquarium shall be *ex-officio* a member and the Chairman of the Aquarium Committee, and such Committee may vest in him any or all of its powers. The Chairman of the Executive Committee and the Secretary of the Society shall also be *ex-officio* members of the Aquarium Committee. Three members shall constitute a quorum. The Executive Committee may delegate to the Aquarium Committee such powers as it may deem proper.

ARTICLE V.

SCIENTIFIC COUNCIL.

SEC. 1. The Executive Committee shall annually appoint a Scientific Council of not more than ten members, and shall fill all vacancies. Members of the Council shall hold office until their successors are appointed.

SEC. 2. The duties of the Council shall be to act as an advisory board in all matters pertaining to the scientific administration of the Society, and especially as to the scientific features of the Park, the promotion of zoology by publications and otherwise, and the preservation of the native fauna of America.

SEC. 3. Four members, including the Chairman, shall constitute a quorum. The Chairman shall be elected annually by the Council. The Chairman of the Executive Committee and the Secretary of the Society shall be members *ex-officio* of the Council.

ARTICLE VI.

MEMBERS.

SEC. 1. The present members and such others as shall become associated with them, under the conditions prescribed by the By-Laws, shall be members of this Society as long as they shall comply with the By-Laws.

SEC. 2. Members failing to comply with these By-Laws, or for other good and sufficient cause, may be expelled from the Society by the Executive Committee.

SEC. 3. Candidates for membership shall be proposed and seconded by members of the Society. The name, occupation, and place of residence of every member as proposed shall be submitted for election to the Board of Managers or the Executive Committee, and such person, when elected, shall become a member upon payment of the annual dues, or of the fees as prescribed below.

SEC. 4. There shall be a class known as Fellows, which shall consist of members of the Society who have rendered marked services to science, and shall be chosen by the Executive Committee. The privileges of Fellows shall be in all respects the same as those of regular members of the Society, but they shall be exempt from the payment of annual dues.

SEC. 5. The annual dues shall be ten dollars, payable in advance, on the first day of May of each year, but the Executive Committee may remit the dues for the current year in the case of members elected between January 1st and May 1st of each year. The classes of membership shall be as follows:

SEC. 6. The payment of \$200 at one time shall constitute any member a Life Member.

A member who has paid annual dues for a period of five years may thereafter, at any time, upon the payment of the difference between the amount of

dues already paid and \$200, become a Life Member, but such payment shall be not less than \$100.

SEC. 7. The payment of \$1,000 at one time, or in the case of a Life Member, of \$800, shall constitute any member a Patron.

SEC. 8. The payment of \$2,500 at one time, or in the case of a Patron of \$1,500, or of a Life Member of \$2,300, shall constitute any member an Associate Founder.

SEC. 9. Any member who shall donate to the Society \$5,000, or property of equal value, or any Associate Founder who shall donate \$2,500, or any Patron who shall donate \$1,000, may be elected by the Board of Managers or Executive Committee a Founder.

SEC. 10. Any member who shall have donated to the Society ten thousand dollars (\$10,000), or its equivalent, may be elected by the Board of Managers or the Executive Committee a Founder in Perpetuity. Such Founder in Perpetuity shall have the power to designate by a last will and testament his successor, who shall thereupon be entitled to all the rights and privileges of the original Founder in Perpetuity, including the right of designating in turn his successor.

SEC. 11. Any member who shall have donated to the Society \$25,000, or its equivalent, may be elected by the Board of Managers, or the Executive Committee, a Benefactor. Benefactors shall have the rights and privileges of a Founder in Perpetuity.

SEC. 12. Persons who have rendered marked service in the science of zoology or natural history may be elected Honorary Members, but not more than three such Honorary Members shall be elected in any one calendar year.

SEC. 13. A resident member who shall have rendered marked scientific or professional services to the Society in any branch of its work may be elected by the Executive Committee a Life Member, Patron, Associate Founder, or Founder. A resident of New York who shall have rendered marked service in zoology or natural history may be elected by the Executive Committee a Permanent Fellow.

SEC. 14. Non-residents who communicate valuable information to the Society, or who have rendered marked service in the science of zoology or natural history, may be elected Corresponding Members.

SEC. 15. Benefactors, Founders in Perpetuity, Founders, Associate Founders, Patrons, Life Members, Honorary Members, Permanent Fellows, Fellows, and Corresponding Members shall be exempt from annual dues.

ARTICLE VII.

PRIVILEGES OF MEMBERS.

SEC. 1. A member's ticket admits the member and his immediate family to the Park on reserve days, and to all lectures and special exhibitions, and may be used by the member's immediate family, and shall be good for the current year.

SEC. 2. Admission tickets to the Park and Aquarium on reserve days are issued to members for distribution, and are good for the current year.

SEC. 3. Each member of the Society is entitled annually to a member's ticket and to ten admission tickets.

SEC. 4. Each member shall also receive one copy of the catalogue or hand-book, the report and official publication of the Society, and shall have all the privileges of the Library and Members' Building.

SEC. 5. No member shall be entitled to the privileges enumerated in this Article unless his annual dues shall have been paid.

SEC. 6. The Life Members shall have all the privileges of members and ten additional admission tickets.

SEC. 7. Benefactors, Founders in Perpetuity, Founders, Associate Founders and Patrons shall have all the privileges of Life Members, and shall in addition receive copies of all scientific works published by the Society.

SEC. 8. Any member who shall fail to pay his annual dues within three months after the same shall have become due, and after notice of thirty days, by mail, shall cease to be a member of the Society; subject, however, to reinstatement by the Board of Managers or Executive Committee for good cause shown.

SEC. 9. Any person elected to membership who shall fail to qualify within three months after notice of his election shall be considered to have declined his election; but such term may be extended by the Board of Managers, or Executive Committee.

ARTICLE VIII.

FINANCES.

SEC. 1. The fiscal year of the corporation shall be the calendar year commencing January 1st and ending December 31st.

SEC. 2. Neither the Society nor any of its Managers or Officers shall contract any debt which, with existing debts, shall exceed in amount the funds then in the Treasury, except to meet expenditures for which the City is liable, and for which the Society will be reimbursed by warrants from the Comptroller's office.

ARTICLE IX.

AMENDMENTS.

SEC. 1. Amendments to these By-Laws may be proposed, in writing, at any meeting of the Board of Managers, and adopted by unanimous consent of the Managers present, or if such proposed amendment shall fail to receive unanimous consent, the Secretary shall, with the notices of the next meeting, send a copy of it to each Manager and state that it will be brought up for action at such meeting, when it may be passed by a majority vote.

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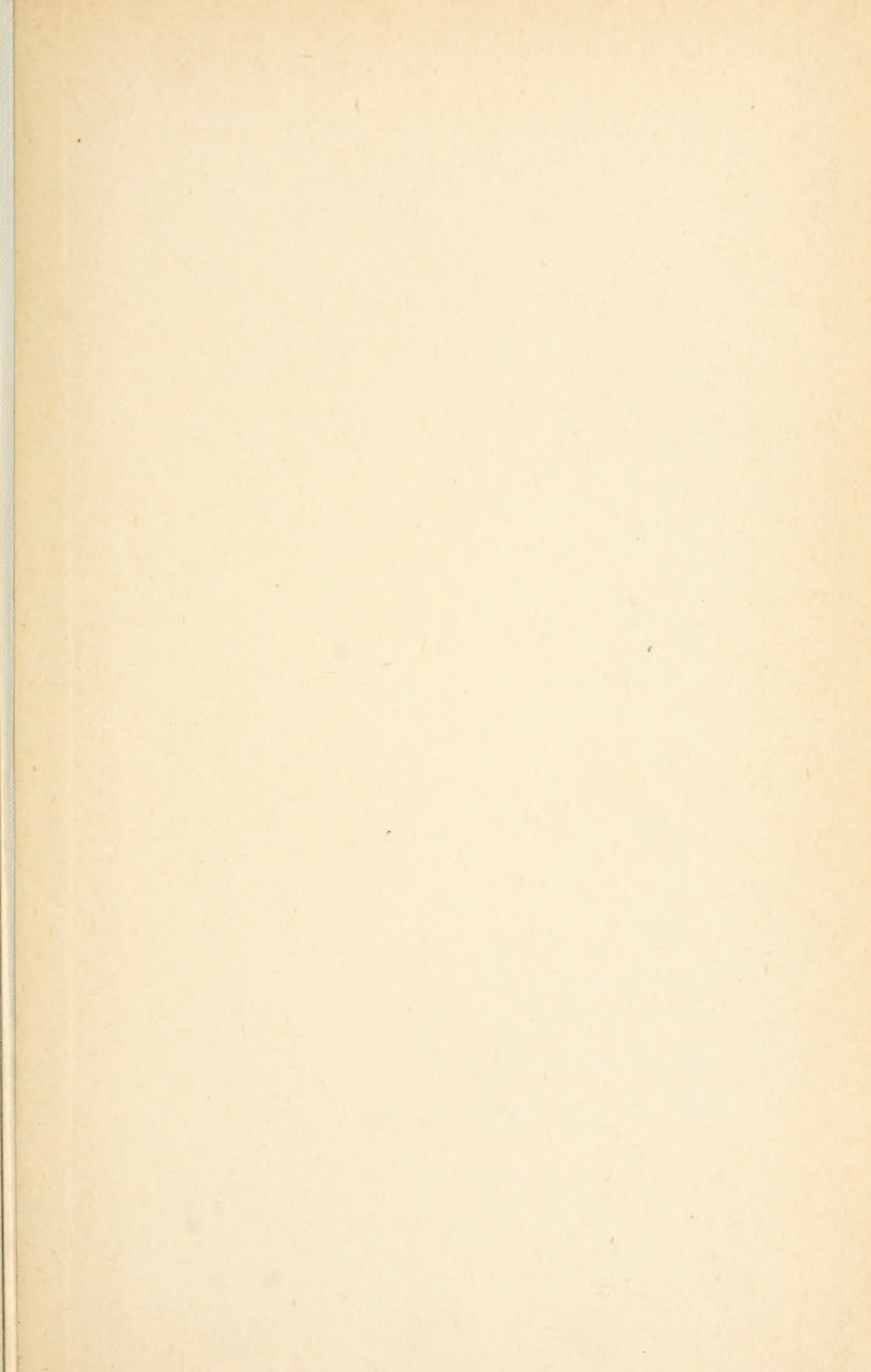
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